BRITISH CHEMICAL AND PHYSIOLOGICAL ABSTRACTS

A., III.—Physiology and Biochemistry (including Anatomy)

OCTOBER, 1940.

(i) GENERAL ANATOMY AND MORPHOLOGY.

Variation in origin of arteries derived from aortic arch in American whites and negroes. J. J. McDonald and B. J. Anson (Amer. J. phys. Anthrop., 1940, **27**, 91—107). W. F. H.

Level of termination of popliteal artery in white and negro. M. Trotter (Amer. J. phys. Anthrop., 1940, **27**, 109—118).—High division of the artery occurs more often, in both races, proximal to the popliteus muscle than on a level with the muscle. The peroneal artery arises more often from the anterior tibial than from the posterior tibial artery. The incidence of high division and the disposition of the terminal branches of the artery are compared with findings in Japanese. W. F. H.

Systematic study of main arteries in the heart region. Aves. F. H. Glenny (Anat. Rec., 1940, **76**, 371—380).—In several species of birds a ligamentous vestige of the left fourth aortic arch persists. Retention of this arch as a functional structure in certain species may indicate a primitive level of evolution from a reptilian ancestor. Relationships between orders of birds may be based on the arrangement of the carotid arteries. W. F. H.

Variability in composition of sphincter of Oddi. B. L. Kreilkamp and E. A. Boyden (Anat. Rec., 1940, **76**, 485—497).—A maceration technique revealed the existence of a new set of fibres that act to reinforce the slit through which the bile and pancreatic ducts enter the duodenal wall. A sphincter pancreaticus was found in 4 of 12 major papillæ and a well-developed sphincter ampullæ in only 2. A strong sphincter choledochus was present in all cases. Numerical correspondence between the incidence of pancreatic reflux and the occurrence of a sphincter ampullæ raises the question as to whether anatomical variation of the component parts of the sphincter of Oddi may not be a factor in the pathological physiology of the biliary tract. W. F. H.

Ebdostyle and thyroid gland of *Ichthyomyzon*. W. J. Lack (J. Morph., 1939, **65**, 549—605).—The thyroid gland of this brook lamprey is the most primitive found in vertebrates. Its relationship to and derivation from the endostyle are described and details of its histology are recorded. J. D. B.

External tubercle of human tuber calcanei. F. Weidenreich (Amer. J. phys. Anthrop., 1940, **26**, 473—487).—In man, the plantar process of the tuber consists of two tubercles, internal and external. In apes only one tubercle is developed corresponding with the internal in man. The external tubercle varies greatly as to size and location. It may be merged in the tuber or dissociated from it. In apes the trochlear process is highly developed, and it is suggested that the external tubercle in man was originally a part of the trochlear process which has shifted forward and downward in the course of evolution to be united with the tuber. The variability of the tubercle in man and the fact that it has sometimes its own centre of ossification indicate that its position is not yet stabilised. In two Upper Palæolithic calcanea the tubercle was dissociated from the tuber to a much greater extent than in modern man. W. F. H.

Appearance of centres of ossification from 6 to 15 years. C. C. Francis (Amer. J. phys. Anthrop., 1940, **27**, 127—138).—A schedule for the date and sequence of appearance of the centres is presented. Irregularities of ossification are common but they give no clinical evidence of disturbance and are of temporary duration. W. F. H.

Mirror image comparison of upper and lower jaws in primitive tetrapods. A. S. Romer (Anat. Rec., 1940, **77**, 175—179).—Upper and lower jaws are similar to one another both externally and internally in the arrangement and character of the bony elements. Similarity may be due to inheritance from some primitive piscine ancestral stage. W. F. H.

Homology of skull elements in turtles. R. Zangerl (J. Morph., 1939, **65**, 383—409). J. D. B.

Study of age determination and growth of *Necturus maculosus* based on parasphenoid bone. W. C. Senning (Amer. J. Anat., 1940, **66**, 483—495).—Lines on the parasphenoid are believed to represent yearly growth increments and by this means the ages of most individuals can be determined with certainty to the 15th or 16th year. Beyond this age the incremental lines become too crowded to be counted accurately and during senescence some years may not be recorded. An age of 23 years is definitely attained and sexual maturity is usually reached between the 7th and 8th years. W. F. H.

Pneumatisation of head of common fowl. J. L. Bremer (J. Morph., 1940, **67**, 143—152).—An account of the process of development of the air cavities connecting with the nasal cavity and the cavity of the middle ear and of the relations of these extensions to developing cartilage and bone. The naso-lacrimal duct in the fowl is itself converted into a voluminous air sac. J. D. B.

Pneumatisation of humerus in common fowl and associated activity of theelin. J. L. Bremer (Anat. Rec., 1940, **77**, 197—211).—The humerus of the chick is invaded by an extension of the cervical air sac. The sac reaches the bone after the cortex is well formed but approx. two weeks after hatching the latter undergoes dissolution of trabeculæ and invasion of mesenchymal tissue. Through the pathway thus formed the air sac grows as a tubular process. Theelin is found in quantity in the yolks of fertile eggs and it is suggested that the œstrogen absorbed during retraction of the yolk sac before hatching acts on the parathyroid glands to produce the temporary dissolution of bone cortex. W. F. H.

Histological study of growing avian femur following experimental dislocation of hip. G. C. Whiston (Anat. Rec., 1940, **76**, 499—521).—Following dislocation of the hip in the day-old chick hyperplasia of fibrous tissue and, after 10 weeks, development of fibrocartilage were observed in the ligamentum teres. Vessels in the sheath of the ligamentum teres are obliterated or greatly reduced in no., and this is considered a major factor in the fibrosis of vessels in the cartilage beneath the fovea capitis and in the development of mucoid degeneration at that site. The no. of cells in the metaphysis, an index of rate of growth, was lowered. Abnormal stresses following dislocation produced definite changes in the internal architecture of the bone. Portions of the cartilage matrix lose their basophilic staining property and ossification extends through the metaphysis into the cartilage of the head, neck, and trochanter. W. F. H.

Obesity in childhood. I. Physical growth and development of obese children. H. Bruch (Amer. J. Dis. Child., 1939, **58**, 457—484).—Growth and maturation of 102 obese children, 2—13 years of age, are compared with results obtained in studies of normal children. Growth in stature is in excess of the average normal but in harmony with the height development of children who mature early. Skeletal maturation is normal or advanced, certainly not delayed. The menarche in obese girls occurs early, in several instances before the age of 10 years. More than 50% of the boys between 11 and 14 years old show signs of approaching or attained puberal development. Since the wt. of normal children who mature early is significantly higher than that of children who mature later, the high wt. of the obese child can be considered as an exaggeration of a normal trend. The findings of intensive growth and early maturation are not consistent with theories which attempt to explain obesity on the basis of hypothyroidism and hypopituitarism; they agree with observations of the growth-promoting effect of abundant nutrition. C. J. C. B.

Congenital cranial osteoporosis: its ætiology and significance. Study of 800 newborn infants. O. Reiss and E. Boder (Amer. J. Dis. Child., 1940, **59**, 931—1001).—There is a seasonal variation in the incidence of congenital cranial softening, which is inverse to the curve of sunshine. The incidence of this anomaly is lowest in infants of mothers who have reported an abundant exposure to sun during pregnancy; its incidence in southern California is half that reported in Norway. Congenital cranial softening shows a predilection for infants of smaller birth wt., crown–heel length, and occipitofrontal head circumference groups. A vitamin-*D* deficiency during pregnancy, rather than in the Ca and P of the maternal diet, may be an ætiological factor in congenital cranial softening. C. J. C. B.

Prepenial scrotum (marsupial type of genitalia) associated with absence of urinary system. C. F. Francis (Anat. Rec., 1940, **76**, 303—307).—In a full-term child both testes, ductus efferentes, epididymides, and the left seminal vesicle were the only internal genitalia present. The penis had a rudimentary glans and prepuce, the navicular fossa was present, but there was no penile urethra. The scrotum was prepenial as in marsupials and the anus dorsally placed. There was complete absence of the urinary system. The abdominal aorta was continued forward from the pelvic brim as a solitary umbilical artery. W. F. H.

Congenital diaphragmatic hernia. J. J. Kristal (Arch. Pediat., 1940, **57**, 76—91).—Case report. C. J. C. B.

Diaphragmatic hernia in infants. E. M. Miller, A. H. Parmelee, and H. N. Sanford (Arch. Surg., Chicago, 1939, **38**, 979—989). F. S.

Congenital atresia of œsophagus in two brothers. J. G. Grieve and J. G. McDermott (Canad. Med. Assoc. J., 1939, **41**, 185). C. J. C. B.

Measuring and photographing the cadaver. R. J. Terry (Amer. J. phys. Anthrop., 1940, **26**, 433—447). W. F. H.

(ii) DESCRIPTIVE AND EXPERIMENTAL EMBRYOLOGY. HEREDITY.

First contractions of heart. C. M. Goss (Anat. Rec., 1940, **76**, 19—27).—Cells of the primordia of the heart before the first contractions and primitive heart tubes a few hr. after contraction had started were studied in rat embryos. The specialised cytological structures, fibrillæ, and cross-striations, are not elaborated until some hr. after contractile activity is well established. It is suggested that cytological differentiation is associated more with a " harnessing of the contractile force " in order to exert mechanical pull outside the cell than with contraction. W. F. H.

Chemistry and cytology of sperm membrane of sheep. W. W. Green (Anat. Rec., 1940, **76**, 455—473).—The membrane stains poorly and is difficult to observe in direct illumination. It is insol. in many protein solvents. Pepsin has a slight action on it and trypsin none. The protein of the membrane is characterised as an albuminoid. Analysis indicates a high N, arginine, histidine, and cystine content and absence of lysine. W. F. H.

Potentialities of embryonic spleen as shown by homoiotransplants into the omentum of the adult rabbit. E. A. Holyoke (Amer. J. Anat., 1940, **66**, 87—131).—Transplants of splenic rudiment

from rabbit embryos of from 12 days to term grow and differentiate readily in the omental bursa of the adult. From embryos of less than 17 days they give rise to the same cellular elements formed by the normal anlage but were not organised into recognisable splenic tissue. Hæmoblasts, small lymphocytes, and in some cases eosinophils were found in differentiating splenic masses and evidence to support the view that these cell types were of local derivation was found. Eosinophilic granulopoiesis does not occur during normal development. No sp. reaction of omentum to transplants and no changes in other organs and tissues of the host were observed. W. F. H.

Selective localisation of Evans-blue (T 1824) in subplacental portions of entoderm in rat. A. Brunschwig, R. L. Schmitz, and S. Jennings (Proc. Soc. Exp. Biol. Med., 1940, **44**, 64—66).—After injection of 4 mg. of this dye into pregnant rats it was in all cases taken up by the villus-bearing part of the entoderm which lies beneath the placenta. Similar localisation took place in half the cases where trypan-blue was used, and not at all with Indian ink. V. J. W.

Germ cell migration in relation to asymmetry in sex glands of hawks. A. J. Stanley and E. Witschi (Anat. Rec., 1940, **76**, 329—341).—There is a primary asymmetry in the distribution of the germ cells in the splanchnic plates prior to the distribution of gonadal primordia and the left side contains a slightly higher no. of germ cells. During migration of the germ cells to their final place in the gonads the primary left–right ratio is maintained in Accipitrine hawks only. In others studied a secondary ratio is established due to shifting of germ cells across the mesentery from right to left. W. F. H.

Opossum pouch young as experimental material. C. R. Moore and D. Bodian (Anat. Rec., 1940, **76**, 319—327).—The North American opossum (*Didelphys virginia*) presents unique mammalian material for many biological problems, particularly those concerned with late embryonic development in which operative treatments are desirable. W. F. H.

Pseudoamnion, pseudochorion, and follicular pseudoplacenta in Poeciliid fishes. C. L. Turner (J. Morph., 1940, **67**, 59—89).—Details are given of the structures associated with viviparity in these fishes and they are shown to form an evolutionary series. It is suggested that oviparous cyprinodonts formed the point of departure for this series. J. D. B.

Follicular pseudoplacenta and gut modifications in Anablepid fishes. C. L. Turner (J. Morph., 1940, **67**, 91—105).—The follicular pseudoplacenta of the Poeciliidæ and the Anablepidæ are parallel developments but the pseudoamnion and pseudochorion of the former have no parallels in the latter. J. D. B.

Development of swim bladder in *Hemichronis bimaculata*. R. S. McEwen (J. Morph., 1940, **67**, 1—57).—An account of the development of the swim bladder and related parts in this Physoclist Teleost. The swim bladder appears as a thick-walled, vesicular, dorso-lateral outgrowth from the gut. Originally situated on the left side, growth changes bring the main part of the bladder into the mid-line above the œsophagus. The bladder epithelium is at first like that of the gut but the lumen is soon obliterated by marked elongation of the cells forming its walls. Later these cells become vacuolated and by the breakdown of some of their substance the lumen comes to be lined by a flat epithelium and becomes inflated by gas which cannot, at this stage, be obtained from the air. There appears to be a correlation between the inflation of the swim bladder and the ability of the animal to maintain an upright posture and to rise off the bottom. No Weberian apparatus is developed. Details are given of the development of gut mesenteries and of the blood supply to gut and swim bladder. The development of the swim bladder in *Hemichronis* throws no light on the bladder–lung relationship question. J. D. B.

Behaviour of pigment cells from cultures of neural crest when grafted back into embryo. F. Dorris (Proc. Soc. Exp. Biol. Med., 1940, **44**, 286—287).—Neural crest cultures produce many pigment cells *in vitro*. These cells, grafted into a limb of an embryo, produce pigmentation which is much more limited than the pigmentation produced by neural crest grafts. V. J. W.

Metabolism of eggs of domestic birds during embryonic development. I. Water metabolism of duck's egg. E. M. Koshuchar (Ukrain. Biochem. J., 1939, **14**, 481—500).—Under optimum conditions of humidity (R.H. 65—68%), 8·6% of the wt. of duck's egg is lost by evaporation during incubation. The water content of the white falls, and of the yolk rises, during the first 10 days of incubation. The white part of the yolk is consumed by the embryo during the first 13 days, then the white up to the 21st day, after which reserve yolk is used. The water content of the embryo rises from 65 to 96% on the 4th or 5th day, thereafter gradually falling to 76—77% at hatching. The water content gives a decreasing series of brain, muscle, whole embryo. The vol. of amniotic fluid is max. on the 17th—19th day. R. T.

Effect of trypsin on development of *Rana pipiens*. A. F. Bliss (Proc. Soc. Exp. Biol. Med., 1940, **43**, 769—770).—Trypsin digests the egg membrane but does not damage the embryo, although development may be stopped by digestive products. V. J. W.

Respiratory metabolism of developing eggs of *Urechis caupo*. N. H. Horowitz (J. Cell. Comp. Physiol., 1940, **15**, 299—308).—O_2 uptake rises in a sigmoid curve to over 9 times the original val. by the 27th hr. when feeding begins. R.Q. is high at the beginning of development, falling to 0·7 by the 6th hr. V. J. W.

Comparison of oxygen consumption of normal embryos and dauerblastulæ of sea urchins. N. H. Horowitz (J. Cell. Comp. Physiol., 1940, **15**, 309—316).—In normal embryos, O_2 consumption rises to a plateau which is reached in 30—40 hr. When development is arrested in the blastula stage by KCNS, O_2 consumption remains at the level normal to the blastula stage. V. J. W.

Action of extracts of chick embryos *in vivo*. M. RUBINSTEIN (Acta Biol. Exp., Warsaw, 1939, **12**, 253—261).—Intravenous injection of extracts of chick embryos (obtained on the 9th day after incubation) has no toxic effects in dogs or rabbits. Body temp., blood pressure, and heart rate are unchanged. Blood coagulation, red cell and reticulocyte count, and hæmoglobin concn. are increased; red cell fragility is diminished. White cell count increases after an initial diminution. Marked hæmatopoietic action was also observed in anæmia after hæmorrhages and surpassed that obtained by injections of serum or egg-white. A. S.

Differential action of *X*-rays on anterior and posterior regions of *Tubifex tubifex*. H. BRANSON and H. KERSTEN (Radiology, 1940, **34**, 200—204).—Using *X*-rays produced at 35 and 25 kv. respectively, three somites in the anterior region or the whole bodies of chloretone-narcotised *T. tubifex* were irradiated. Partial irradiation of the anterior tip killed more than 25% and produced tuberosities in a further 44% within 3 days; irradiation of the heart region also caused death or progressive disintegration in 28% and tuberosities in 9%; irradiation of the middle section caused about the same no. of total deaths, only a few tuberosities, but 32% of separations with death of one part, nearly always the posterior, and 10% of separations with both parts living. Total irradiation for 40 min. and over caused death of all the animals; with shorter periods partial death, usually of the posterior end, or no change was observed. E. M. J.

Action of intermittent ("flimmer") *X*-radiation on eggs of *Drosophila melanogaster*. O. HOTZ (Strahlenther., 1939, **66**, 255—268).—250 r. given by continuous or intermittent irradiation (1 : 2 sec.) had the same action. E. M. J.

Chromosomes of chimpanzee. C. H. YEAGER, T. S. PAINTER, and R. M. YERKES (Science, 1940, **91**, 74).—The haploid no., obtained from testis tissue, is very probably 24. All elements appeared bivalent, and one resembled the *X*–*Y* complex of man. E. R. S.

Sex differentiation in triploid newts (*Triturus viridescens*). G. FRANKHAUSER (Anat. Rec., 1940, **77**, 227—245).—The normal process of sex differentiation is described briefly. Of four triploid larvæ the gonads of one were typical testes and those of the other three were rudimentary ovaries which contained less than half the normal no. of germ cells, mostly undifferentiated. In newts triploidy appears to affect the female sex only. The rudimentary condition of the ovaries may indicate intersexuality or merely a marked delay in growth and differentiation due to general physiological effects of triploidy. W. F. H.

Formation of tetrads and meiotic mitoses in male of *Rhytidolomia senilis*. F. SCHRODER (J. Morph., 1940, **67**, 123—141).—In this bug the "two by two" rule of Darlington is not followed in diakinesis. At this time tetrads are formed by the approach and union of two pairs of chromatids. If parasynapsis and crossing over take place during synizesis such association of homologues is completely abrogated before diakinesis. J. D. B.

(iii) PHYSICAL ANTHROPOLOGY.

Classification of sub-human types. R. BROOM (Nature, 1940, **146**, 96).—It is suggested that *Pithecanthropus*, *Sinanthropus*, etc. should remain unclassified. E. R. S.

Attainment of the upright posture in man. F. W. JONES (Nature, 1940, **146**, 26—27).—Polemical. E. R. S.

Paranasal sinuses of anthropoid apes. A. J. E. CAVE and R. W. HAINES (J. Anat., 1940, **74**, 493—523).—Anthropoid apes tend to preserve the primitive primate heritage of paranasal structure, viz., maxillary and sphenoidal sinuses, the former opening into the middle meatus by way of a semilunar groove (sulcus semilunaris). Some gibbons retain this primitive pattern unmodified, others show a reduction of the plica semilunaris with the maxillary sinus opening directly into the middle meatus. The orang skull is characterised by an enormous extension of the maxillary sinus which reduces or obliterates the sphenoidal sinus, and by a complete loss of the plica semilunaris. The gorilla, chimpanzee, and man have acquired neomorphic ethmoidal sinuses including a frontal sinus. In the chimpanzee the maxillary sinus possesses a distinctive intrapalatal extension; otherwise it preserves a type of paranasal sinus structure from which that of the gorilla and man may well have been derived. In the gorilla there is a marked dilatation of the nasolacrimal duct. Man is characterised by the extreme development and variability of the ethmoidal sinuses. The phylogenetic significance of these resemblances and differences are discussed. J. D. B.

Size of orbit and eye in primates. A. H. SCHULTZ (Amer. J. phys. Anthrop., 1940, **26**, 389—416).—Body-wt., capacity of orbit, and vol. of eyeball are recorded for 208 primates representing all major groups and widely different ages. All large primates have proportionately much smaller orbits than do small primates. The relative capacity of the orbit is slightly greater in females and very much greater in young than in adult animals. Similar results were found in regard to vol. of the eye. W. F. H.

Maya Old Empire skeleton from Copan, Honduras. J. M. LONGYEAR (Amer. J. phys. Anthrop., 1940, **27**, 151—154).—The bones of a young adult male are described and compared with finds from San Jose. W. F. H.

"Mongoloid spot" in Turkey and Iraq. H. FIELD (Amer. J. phys. Anthrop., 1940, **27**, 119—126).—The "mongoloid spot" was found in 3·78% of over 11,000 children examined. Its position and colour in males and females are recorded. W. F. H.

Physical measurements on negro, Navajo, and white girls of college age. M. STEGGERDA (Amer. J. phys. Anthrop., 1940, **26**, 417—431).—Negroes are equal in stature to whites but have a much shorter trunk. Intercristal measurements of trunk in relation to shoulder breadth are considerably

smaller in negroes than in whites. The extremities are longer in negroes than in whites, as are most of the face measurements. Navajos are shorter than negroes and whites; their arms are relatively longer than in whites but not equal to negroes. Their trunk is relatively as long as in whites but broader and deeper. Navajos have the broadest pelvis and the widest heads and faces. Their teeth are better than those of negroes, whilst whites are inferior in regard to dental caries. In most measurements the Navajos are least variable. W. F. H.

(iv) CYTOLOGY, HISTOLOGY, AND TISSUE CULTURE.

Living thyroid follicles in rabbit. R. G. Williams (J. Morph., 1939, **65**, 17—52).—An improved transparent chamber for the study of transplanted tissue is described. Autogenous thyroid grafts were made into such chambers and observed for long periods. Study of the cycle of follicular change under such conditions showed that only a few follicles are undergoing active changes at any one time and it is presumed that these are supplying the ordinary requirements of the body, the remainder being an inactive reserve. Activity was greatly retarded by NaI and accelerated by thyrotrophic hormone. NaI increases the amount of colloid to different degrees in different follicles, in some by what may be an apocrine type of secretion. J. D. B.

Ultracentrifugation of rat spinal ganglion cells with reference to neurofibrillæ. H. W. Beams and H. W. Kirshenblit (Anat. Rec., 1940, **76**, 95—101).—With high centrifugal force neurofibillæ are conc. at the centrifugal end of the cell and the threads of those nearest the centripetal ends are frayed. The Golgi apparatus was not displaced. Cells treated thus are not killed and it is believed that neurofibrillæ have a definite structure in the living cell. W. F. H.

Tusks of an Indian elephant—innervation of pulp. H. L. Weatherford (Anat. Rec., 1940, **76**, 81—93).—As the crown closes during growth a central tract of secondary dentine containing a no. of irregular dentinal tubules, lacunæ, and the remnants of calcified capillaries is formed. Medullated and non-medullated nerve fibres enter the pulp at the growing end and pass to the apex singly or in small fasciculi. A nerve plexus is associated with the arteries, arterioles, and capillaries but no definite nerve endings or ganglion cells were observed around blood vessels. Nerve fibres lose their medullary sheaths beneath the layer of odontoblasts and terminate in simple bead-like endings at various levels in this layer. Nerve fibres may end deep to the odontoblasts, especially near the tip of the pulp. W. F. H.

Epithelial components of teleost pituitary gland. W. M. Scruggs (J. Morp., 1939, **65**, 188—213).—With standardised methods of staining it was established that the teleost hypophysis, in addition to the pars nervosa, is usually made up of three glandular parts: the pars anterior, the "Übergangsteil," and the pars intermedia. The cytological details of the three portions are described. J. D. B.

"Signet ring" or "castration" cells in chick. F. Payne (Anat. Rec., 1940, **76**, 29—37).—"Signet ring" cells are described in the pituitary of castrate chicks and in controls of both sexes. They were not observed in two females 13 years old or in six males varying from 6 to 9 years. The process of vacuolation of these cells is described and its possible significance discussed. W. F. H.

Histology of digestive tube of *Cyprinus carpio*. E. Curry (J. Morph., 1939, **65**, 53—78). J. D. B.

Islet tissue in pancreas of Elasmobranchii. T. B. Thomas (Anat. Rec., 1940, **76**, 1—17).—*A*, *B*, and *D* types of granular islet cells were identified in 6 species. Three groups of animals are distinguished according to the relation of islet tissue to the duct system: (1) a primitive condition in which islet cells form a second epithelial layer around duct cells; (2) an intermediate condition in which they form solid cords alongside the ducts; (3) an advanced condition in which most are in the form of "islands" frequently separated from the duct system. W. F. H.

Nature of fatty change in kidneys. J. H. Dible and J. D. Day (J. Path. Bact., 1940, **51**, 1—7).—In rabbits in which fatty change was induced in the kidneys by starvation, optically inactive fat appeared chiefly in the wide parts of Henle's tubules, more especially in the descending limb. The extent of this change was related to the amount of fat found in the kidney determined chemically and to the quantity present in the animal's fat depots. These findings point to the fatty change being of the nature of an infiltration and give no support to the theory of phanerosis. (3 photomicrographs.) C. J. C. B.

Use of desiccated chick embryo in tissue culture technique. P. R. Peacock and R. I. Shukoff (Nature, 1940, **146**, 30—31).—Desiccated 9—11-day chick embryos are used to eliminate the wastage involved in the use of fresh material. The desiccate keeps for at least 7 months at 4°. 5 different tissues were successfully grown on fowl plasma clot to which was added an aq. extract of desiccate. Infertile eggs were used for cooking. E. R. S.

Toxic effect of human urine on fibroblasts growing *in vitro*. M. Rachmilewitz (Proc. Soc. Exp. Biol. Med., 1940, **43**, 497—501).—Urine diluted 1 : 50 partly, and 1 : 5 completely, inhibits growth. This property is not destroyed at 100° and is non-dialysable. V. J. W.

Tissue culture growth stimulants from ground frozen-dried chick embryos. D. C. Hetherington and J. S. Craig (Proc. Soc. Exp. Biol. Med., 1940, **44**, 282—285).—Frozen-dried whole embryos give a better product than similarly treated plasma or embryo juice. V. J. W.

Action of cytotoxic antireticular serum on tissue culture. I. M. O. Goldfarb (J. Méd., Ukraine, 1939, **9**, 371—382).—This serum stimulates the growth of spleen tissue *in vitro*. In big doses and high titre, it inhibits growth. The cytotoxic antireticular serum is sp. to each animal species. M. K.

Macromolecular components of untreated and of formolised normal chick embryo tissue. D. G.

Sharp, A. R. Taylor, H. Finkelstein, and J. W. Beard (Proc. Soc. Exp. Biol. Med., 1939, **42**, 459—461).—The ultracentrifuge sedimentation pattern of chick embryo extracts is not affected by formolisation. V. J. W.

Macromolecular components of chick embryo tissue diseased with virus of equine encephalomyelitis. A. R. Taylor, D. G. Sharp, H. Finkelstein, and J. W. Beard (Proc. Soc. Exp. Biol. Med., 1939, **42**, 462—464).—The ultracentrifuge sedimentation pattern of infected chick embryo extract shows the presence of a product S_{20}° = about 250×10^{-13} cm. sec.$^{-1}$ dyne^{-1} which is not present in normal extracts. It is present only in NaCl and not in aq. extracts and is infective in the order of 10^{14} mouse units per g. V. J. W.

Modified form of acetocarmine. S. Sampath (Current Sci., 1940, **9**, 229—230).—If "Igepon T" (0·2 g.) is dissolved in 45% aq. acetic acid and powdered acetocarmine added to the boiling solution, the keeping qualities of the stain are improved. W. O. K.

Improved smear method for rapid double staining. P. N. Bhaduri (J. Roy. Microscop. Soc., 1940, [iii], **60**, 1—7).—Treatment of roots of growing seedlings before fixation with 0·01—1% colchicine solution destroys the spindle mechanism and consequently the chromosome orientation, thus allowing clearer views for cytological observation. Fixation in chromic acid 1% + formalin 10% (6 : 4) is followed by washing, hydrolysis in N-HCl at 60°, and staining in decolorised fuchsin solution. The extreme root-tip is put in 45% acetic acid on a slide and gently pressed with the coverslip to make an even smear. Treatment with acetic acid–alcohol (1 : 1) separates slide and coverslip, and the prep. is then mordanted in Na_2CO_3 and counterstained in light-green, then dehydrated, cleared in xylol, and mounted in Sira. For pollen cells the same method can be used. Alternatively the anthers are crushed, smeared, and fixed in chromic acid 1% and osmic acid 2% (3 : 1). After washing, bringing through alcohol, and hardening in 80% alcohol + H_2O_2 (3 : 1), the material is hydrolysed in N-HCl and stained as above. E. E. H.

Osmic impregnation method for mitochondria in plant cells. E. H. Newcomer (Stain Tech., 1940, **15**, 89—90).—Material is fixed for 48 hr. in 3% $K_2Cr_2O_7$ 1·25 g. + 3% $(NH_4)_2Cr_2O_7$ 1·25 g. +3% $CuSO_4$ 1 g. in 1000 c.c. of distilled water, then washed overnight, and treated with 2% OsO_4 for 4—6 days. After washing overnight, material is dehydrated through alcohols, cleared in benzene, imbedded in paraffin wax, and sectioned at 5 μ. Sections are bleached for 5 min. in 1% $KMnO_4$, placed in 3% oxalic acid for 3 min., washed, and counterstained in acid fuchsin. After dehydrating sections can be further stained in 1% gold-orange in clove oil, and finally cleared in xylol and mounted in balsam. Nuclei stain red, cytoplasm and cell walls orange, and chondriome black. E. E. H.

Simultaneous fixation and decalcification of bone. W. L. McNamara, B. Murphy, and W. A. Gore (J. Lab. clin. Med., 1940, **25**, 874—875). C. J. C. B.

Plastic cover glass, *iso*butyl methacrylate. H. C. O'Brien and R. T. Hancey (Science, 1940, **91**, 412).—A benzol or xylol solution of the plastic is used; it dries hard in 5—10 min. E. R. S.

Ethyl methacrylate as mounting medium for embryological specimens. W. O. Puckett (Science, 1940, **91**, 626).—Methacrylate monomeride was partly polymerised before use and kept in a refrigerator. Small glass dishes were used as moulds. The optical properties of the preps. are comparable with those of balsam glass preps. A method of making mounts on microscope slides is given. E. R. S.

***iso*Butyl methacrylate as mounting medium for histological preparations.** J. M. Hamilton (Science, 1940, **92**, 44).—The method was unsuccessful with macaque brain sections (30 by 50 mm. by 25 μ.), resulting in warping or cracking of the prep. Myelin sheaths stained by Weil's method turned grey and finer detail was lost. E. R. S.

Speedier and less costly method of concentration in nitrocellulose imbedding. H. W. Jensen (Science, 1940, **91**, 509).—Recovery of scrap celloidin and modifications in technique are described. E. R. S.

Nitrocellulose in amyl acetate as embedding medium. H. S. Bennett (Anat. Rec., 1940, **76**, 233—239).—Directions for the prep. and use of the medium are given. W. F. H.

Method for injecting insect tracheae permanently. L. E. Hagmann (Stain Tech., 1940, **15**, 115—118).—Specimens having the holo- or hemipneustic type of tracheal system are chloroformed and suspended above the stain solution in a bottle. The air from the latter is then exhausted by pump to 29 in. Hg, and after 15 min. the specimen is dropped into the liquid. After 5 min. air is allowed to re-enter slowly. After a further 15 min. the material is removed, fixed, and treated in the usual way. The dye solution is trypan-blue 2 g. + santomerse-3 1 g. + glacial acetic acid 10 c.c. + distilled water 90 c.c. The fixing solution is formalin 15 c.c. + glacial acetic acid 10 c.c. + $BaCl_2$ saturated solution in distilled water 75 c.c. Safranine makes a good counterstain. E. E. H.

Simple method for mounting embryological material. C. W. Nichols (Stain Tech., 1940, **15**, 119).—Specimens can be attached by thread to sheet celluloid instead of to glass plates for final mounting in museum jars. E. E. H.

Cover-slip dispenser. E. E. Eckel (J. Lab. clin. Med., 1940, **25**, 882—883). C. J. C. B.

(v) BLOOD AND LYMPH.

Hæmatological standards for the Chinese. C. H. Wu and C. Tsai (Chinese J. Physiol., 1940, **15**, 289—298).—In the capillary blood of 301 adults, aged 18—43, for males the mean cell vol. was 42·2%, the red cell count $4·97 \times 10^6$, the hæmoglobin 13·6 g.-%, the mean concn. of hæmoglobin in the corpuscle 32·2%; for females, the corresponding vals. were 35·7%, $4·17 \times 10^6$, 11·3%, and 31·7% The vol. of the individual cells increased in cold weather.

Erythrocyte fragility and leucocyte count (average 6800 per cu. mm.) were variable. N. H.

Origin and developmental potentialities of blood cells. C. A. Doan (Bull. N.Y. Acad. Med., 1939, **15**, 668—697).

Chemical study of blood of Philippine carabaos. A. C. Gonzaga (Philippine J. Sci., 1940, **71**, 317—320).—The results of determinations in 20 normal Philippine carabaos of the following are tabulated: blood-sugar, non-protein-N, urea-N, serum-Ca, inorg. PO_4''', Cl as NaCl, Fe, and hæmoglobin. The results are approx. the same as those for cattle. C. J. C. B.

Anaphylaxis of blood cells. I—III. I. Takahashi (Arb. med. Univ. Okayama, 1939, **6**, 311—335, 343—357, 361—376).—I. Guinea-pigs become anaphylactic after subcutaneous administrations of ox blood cells. This reaction is produced by the hæmoglobin and not by the stroma. Lysis of red cells precedes the shock reaction in the animal body.

II. Various antibodies are formed or reformed from erythrocytes produced by erythrocyte immunisation in guinea-pigs. Globin-, fibrinogen-, and globulin-antibodies were established by precipitin reaction, but not those for α-hæmatin and albumin. The animals which are sensitised to erythrocytes show typical anaphylactic reactions after injection of globin, fibrinogen, or globulin. These results were also established on the isolated intestine (Magnus technique).

III. An antibody is formed by immunisation with α-hæmatin which has been previously adsorbed by adsorbin (Sankyo), but not with α-hæmatin sol. H. H. K.

Hæmatologic values for normal children, 3, 4, and 5 years of age living in Hawaii. C. J. Hamre and K. K. L. Wong (Amer. J. Dis. Child., 1940, **60**, 22—35).—Data for the hæmatologic vals. of 179 healthy children 3—6 years of age and of several different races residing in the Hawaiian Is. are presented. The blood vals. show differences in respect to age, sex, and race, and agree closely with those given for children of other parts of the world. C. J. C. B.

Counting of thrombocytes. Vilarino and J. V. Pimentel (Klin. Woch., 1939, **18**, 1253—1256). M. K.

Influence of vitamin-*A* on thrombocytes and bone marrow. J. Anagnostu (Klin. Woch., 1939, **18**, 1277—1279).—Vitamin-*A* deficiency decreases the thrombocytes (by 30—70%) and the bone marrow cells; sometimes complete atrophy develops. M. K.

Human sternal bone marrow in hyperthyroid and myxœdematous states. R. M. Jones (Amer. J. med. Sci., 1940, **200**, 211—220).—Sternal marrow aspirated from 18 normal individuals contained an average of 6·2%, from 12 individuals with hyperthyroidism 13·5%, from 7 individuals with hypothyroidism 2·4%, of nucleated cells. 5 cases of hypothyroidism treated with desiccated thyroid or thyroxine, and subsequently studied, showed a marked rise in the % of nucleated cells in the sternal marrow. A case of thyrotoxicosis following thyroid ingestion showed a marked decrease in the % of nucleated cells in the marrow when thyroid treatment was stopped; there was a less marked decrease after subtotal thyroidectomy. The hyperplasia found in the marrow of the hyperthyroid individuals was myeloid in character and was not reflected in the peripheral blood. C. J. C. B.

Anæmia in pregnancy in India. L. E. Napier (Indian J. Med. Res., 1940, **27**, 1009—1040).—A review of work done in this field. H. B. C.

Antianæmic principle in human liver in carcinoma of stomach and cæcum. J. R. Schenken, J. Stasney, and W. K. Hall (Amer. J. med. Sci., 1940, **200**, 11—17; cf. A., 1939, III, 812).—An extract prepared from the liver of a patient who died of scirrhous carcinoma of the pars pylorica failed to produce a reticulocyte response when administered to a patient with pernicious anæmia in relapse. A control extract from the liver of a patient who died of cerebral hæmorrhage stimulated erythropoiesis in the same subject. An extract from the liver of 3 patients who died of gastric carcinoma involving the whole stomach except for a portion of the pars pylorica stimulated erythropoiesis in patients with a macrocytic hyperchromic anæmia. The hematopoietic potency was present in an extract prepared from the liver of a markedly emaciated patient who died of carcinoma of the cæcum, as demonstrated by its administration to a patient with pernicious anæmia. C. J. C. B.

Anahæmin in tropical macrocytic anæmia. N. H. Fairley (Lancet, 1940, **238**, 1118—1119).—A successful case report. C. A. K.

Pernicious anæmia: erythrocyte response to treatment. M. C. Riddle (Amer. J. med. Sci., 1940, **200**, 145—154).—In 523 patients with pernicious anæmia satisfactorily treated, the average weekly increase in erythrocyte count at the end of 2 weeks' treatment bore an inverse relationship to the erythrocyte count before treatment. This relationship is expressed by $I = 0{\cdot}78 - 0{\cdot}174E_0$, where I is the average weekly increase in erythrocyte count after 2 weeks' treatment and E_0 the erythrocyte count before treatment expressed as millions per cu.mm. This equation is recommended as a standard for measuring the relative effectiveness of treatment in pernicious anæmia. Observed vals. equal to or greater than those obtained from this equation indicate adequate treatment; lower vals. indicate inadequate treatment. The existence of various complicating factors such as concurrent disease, transfusion, or hæmorrhage in association with pernicious anæmia invalidates the use of this standard. C. J. C. B.

Blood of newborn rats after oral administration to mother of normal and abnormal human gastric juice. C. P. Schlicke (Amer. J. med. Sci., 1940, **200**, 2, 155—163).—Normal human gastric juice contains a substance which when administered orally to pregnant albino rats produces fœtal blood changes consisting of increase in the no. of circulating red cells and a decrease in their vol. and diameter which can be detected at birth. This substance is

without effect on the relative no. of reticulated or nucleated red cells in fœtal blood. Its activity is enhanced by neutralisation and destroyed by heating. The substance is absent from the gastric juice of patients with pernicious anæmia. It is present in variable amounts in the gastric juice of patients with simple achlorhydria or carcinoma of the stomach. C. J. C. B.

Suppression of iso-agglutinins. S. O. Levinson and A. Cronheim (J. Amer. Med. Assoc., 1940, **114**, 2097—2098).—The agglutination titre of type *A* serum was much reduced by mixing with type *B* serum and vice versa. This accounts for the absence of reactions with universal donors and for the safety of pooled plasma or serum transfusions. C. A. K.

Treatment of blood disorders (J. Amer. Med. Assoc., 1940, **114**, 2207—2214, 2301—2306, 2375—2382).—Discussions at Cornell University Medical College on (A) Fe therapy, (B) the use of Fe and other metals, (C) the use of transfusions. C. A. K.

Influence of vitamin-*C* on blood in malaria. I. Gerdjikoff (Klin. Woch., 1939, **18**, 1214—1217).—Vitamin-*C* deficiency in malaria delays the increase of reticulocytes induced by the sp. treatment. M. K.

Reticulocyte counts. G. Sack (Klin. Woch., 1939, **18**, 1598—1600). M. K.

Roentgen therapy in blood disorders (J. Amer. Med. Assoc., 1940, **114**, 2451—2456).—Discussion at Cornell University. C. A. K.

Hæmolytic jaundice. W. P. Thompson (Bull. N.Y. Acad. Med., 1939, **15**, 177—187).

Acute hæmolytic anæmia (acquired hæmolytic icterus, acute type). W. Dameshek and S. O. Schwartz (Medicine, 1940, **19**, 231—327).

Hæmolysinic anæmia and hepatic degeneration cured by splenectomy. G. E. Farrar, W. E. Burnet, and A. J. Steigman (Amer. J. Med. Sci., 1940, **200**, 164—172).—A case of hæmolytic anæmia showed a macrocytic type of anæmia in its third crit. episode during 2 years. Transfusions aggravated the anæmia, and the symptoms and laboratory evidences of severe liver dysfunction became apparent. A hæmolysin was demonstrable in the blood serum before but not after a successful splenectomy. The clinical, hæmatological, and biochemical response to splenectomy was astonishingly complete and rapid although the patient was shown by biopsy at the time of operation to have severe fatty and pigmentary degeneration of the liver. C. J. C. B.

Erythrocyte morphology in experimental hæmolytic anæmia as induced by specific hæmolysin. W. D. Tigertt, C. N. Duncan, and A. J. Hight (Amer. J. med. Sci., 1940, **200**, 173—182).—The administration of a sp. hæmolysin to the donor animal (dog) is followed by a fall in the erythrocyte and hæmoglobin levels, proportional to the amount of hæmolysin administered and to the titre of the hæmolysin. In the process of cell destruction due to hæmolysin (in contrast to the mechanism of hypotonic hæmolysis) the erythrocytes approach a spherical form by a diminution in diameter associated with little or no increase in corpuscular vol. This approach to sphericity is paralleled by proportionately decreased resistance to hypotonic hæmolysis. The length of life in the blood stream of the erythrocytes altered by the hæmolysin is inversely proportional to the amount and titre of the hæmolysin administered, and survival periods up to 1 month have been observed. C. J. C. B.

Hæmolytic reactions following transfusions of blood of homologous group with three cases in which same agglutinogen was responsible. A. S. Wiener and H. R. Peters (Ann. int. Med., 1940, **13**, 2306—2322).—In 2 cases the serum contained an iso-agglutinin designated as "anti-Rh." This is explained as the immune response to the injection of "Rh-plus" blood into Rh individuals, the blood group playing no rôle. Following the appearance of the anti-Rh agglutinins, the transfusion of "Rh-plus" blood gave rise to hæmolytic reactions. The reactions of the anti-Rh sera corresponded closely with those of immune rabbit sera prepared by Landsteiner and Wiener by the injection of rhesus blood. The frequency distribution of agglutinogen Rh in the general population is approx. 85% "Rh-plus" and 15% "Rh-minus." C. J. C. B.

Effect of different substances on activity of cobra (*Naja naja*) hæmolysin. S. S. De (Indian J. Med. Res., 1940, **27**, 793—806)—The hæmolytic activity of the venom is max. at p_H 7·6; heating at 60° for 1 hr. increases its activity, but higher temp. diminish it. Normal serum from horse, sheep, rabbit, and guinea-pig inhibits the hæmolysis of rabbit and guinea-pig red cells by the venom; inactivated serum inhibits less actively although inactivated horse serum accelerates hæmolysis. Lipins extracted from guinea-pig and rabbit sera accelerate, those from sheep sera inhibit, hæmolysis of guinea-pig red cells. Casein, cholesterol, 0·25% $CaCl_2$, $PbCl_2$, $BaCl_2$, or $HgCl_2$ causes inhibition, egg-albumin, lecithin, 0·05% $CaCl_2$ or glycine acceleration, of hæmolysis of guinea-pig cells. H. B. C.

Reversible inactivation of hæmolysin of cobra (*Naja naja*) venom. S. S. De (Indian J. Med. Res., 1940, **27**, 807—817).—Moderate concns. of I first increase and then depress the activity of crude cobra venom; lower concns. only increased it. The partly inactivated product regained its activity on treatment with H_2S, NaCN, ascorbic acid, cysteine, and reduced glutathione. With purified hæmolysin, I only gave inactivation which was reversed by the same compounds as for crude venom. H_2O_2 and ferricyanide had the same effect as I. Benzoquinone has no action on crude venom but depresses the activity of purified hæmolysin in 10 min., which is partly regenerated by H_2S. Cu_2O and phenylmercuric chloride inactivate purified hæmolysin, whilst H_2S or reduced glutathione will restore this. H. B. C.

Congestive splenomegaly (Banti's syndrome). L. M. Rousselot (Bull. N.Y. Acad. Med., 1939, **15**, 188—196).

Medical-surgical splenopathies. A. O. Whipple (Bull. N.Y. Acad. Med., 1939, **15**, 174—176.

Effect of ascorbic acid administration on experimental polycythæmias: mechanism of cobalt polycythæmia. J. E. Davis (Amer. J. Physiol., 1940, **129**, 140—145).—Ascorbic acid (8 mg. per kg. daily) depresses Co polycythæmia in dogs but not that produced by daily exposure to low atm. pressure. Co diminishes blood-ascorbic acid in dogs with Co polycythæmia. Co may stimulate erythropoiesis by interfering with a respiratory function of vitamin-*C*. M. W. G.

Blood group tests in disputed paternity. D. Harley and G. R. Lynch (Lancet, 1940, **238**, 911—912).—Non-paternity was established in 8 out of 50 cases tested by blood group for disputed paternity. C. A. K.

Blood groups and their inheritance. G. L. Taylor (Lancet, 1940, **238**, 938—940).—A review. C. A. K.

Sedimentin index. G. Day (Lancet, 1940, **238**, 1160—1162).—The sedimentin index is log max. velocity of sedimentation of red cells in plasma expressed in mm. per 100 min. It is a measure of the concn. of fibrinogen, serum-globulin, or other "sedimentins" which cause the corpuscles to agglutinate, and is considered more valuable than the ordinary 1-hr. Westergren reading in cases of pulmonary tuberculosis. C. A. K.

Diagnostic and therapeutic considerations in management of idiopathic thrombocytopenic purpura. R. H. E. Elliott (Bull. N.Y. Acad. Med., 1939, **15**, 197—210).

Effect of vegetative drugs on bleeding time and amount of blood lost. T. Shirasaka (Folia pharm. japon, 1940, **28**, 50—51).—Adrenaline (0·05 mg. per kg.), tetrahydro-β-naphthylamine (1—30 mg.), pilocarpine (0·5—10 mg.), acetylcholine (0·1—3 mg. per kg.), and yohimbine diminish bleeding time and amount of blood loss in ear-veins of rabbits. Atropine (0·1—30 mg. per kg.) diminishes the time but increases the vol. lost. 3—10 mg. per kg. of quinine diminish time and vol. of blood lost, but 30—50 mg. per kg. increase both. H. H. K.

Hæmorrhagic anæmia: function of reticulocytes. Z. Nobuoka (Japan. J. Med. Sci., III, 1940, **6**, 245—256).—The blood of normal rabbits contains 0·4—1·9% of reticulocytes; its O_2 consumption is negligible. When 10 c.c. of blood per kg. body-wt. are withdrawn daily, the reticulocyte count rises rapidly, reaching 48—65% within a week; the O_2 consumption of the blood increases correspondingly. As the sp. gr. of the reticulocytes is smaller than that of the erythrocytes they can, in part, be separated by centrifuging; the O_2 consumption of the upper layer markedly exceeds that of the lower. H. Ro.

Concentrated serum in shock. C. H. Best and D. Y. Solandt (Brit. Med. J., 1940, I, 799—802).—Intravenous administration of conc. serum and pituitrin was effective in the treatment of dogs given shock by histamine or trauma with or without extensive hæmorrhage. C. A. K.

Climatic effects on volume and composition of blood in man. H. C. Bazett, F. I. J. Sunderman, J. Doupe, and J. C. Scott (Amer. J. Physiol., 1940, **129**, 69—83).—Exposure to variation of environmental temp. maintained for several days produces changes in blood vol. (measured by dyestuff or CO methods). Blood vol. is increased by warmth, and decreased by cold. Total circulating hæmoglobin and total plasma-protein move in the same direction. The changes in plasma vol. develop more rapidly than those in the cells. M. W. G.

Dehydration of blood. S. Amberg and A. E. Osterberg (Proc. Staff Mayo Clin., 1940, **15**, 267—270).—Serum can be dialysed against a solution of acacia. The protein and lipin fractions increase while the inorg. constituents decrease in concn. Improved dehydration of serum may also be produced by means of an air play on serum-filled Cellophane tubes. H. H. K.

Protein compatibility of blood in transfusion. A. Bogomoletz (J. Méd., Ukraine, 1939, **9**, 643—655).—A discussion. M. K.

Rate and volume of blood transfusions in anæmia. H. L. Marriott and A. Kekwick (Brit. Med. J., 1940, I, 1043—1046).—Recommendations as to rate and vol. of blood transfusions are suggested from the data of 194 cases of anæmia. C. A. K.

Plasma transfusions in hæmorrhage. H. J. Brennan (Brit. Med. J., 1940, I, 1047—1048).—In 15 cases of hæmorrhage, plasma transfusion increased the red cell count. This is attributed to the washing out of swollen red cells from the muscles into the general circulation. C. A. K.

Plasma-prothrombin determination. D. H. Kaump and J. H. Greenwood (Amer. J. clin. Path., 1940, **10**, 397—407).—The optimum concn. of $CaCl_2$ was 25%, of thromboplastin 25%, and of plasma 50% for use in prothrombin determinations. The clotting time varies with the temp. of the reaction; temp. of 70—80° F. are advised for clinical purposes. The use of normal controls run at the same time as the test plasma, together with the expression of the prothrombin content in % of normal, will facilitate the use and interpretation of this test by clinicians. C. J. C. B.

Vitamin-*K* and cerebral hæmorrhage in newborn. A. I. S. Macpherson, E. McCallum, and W. F. T. Haultain (Brit. Med. J., 1940, I, 839—844).—2-Methyl-1 : 4-naphthaquinone and diacetyl-2-methyl-1 : 4-naphthaquinol raised the blood-prothrombin level in newborn babies. Administration of these substances to the mother about 12 hr. antepartum also raised the infant's prothrombin level. C. A. K.

Therapeutic effect of phthiocol in treatment of hypoprothrombinæmia associated with jaundice. H. R. Butt, A. M. Snell, and A. E. Osterberg (Proc. Staff. Mayo Clin., 1939, **14**, 497—502).—50—100 mg. of synthetic phthiocol (3-hydroxy-2-methyl-1 : 4-naphthaquinone) was administered to 10 patients with hypoprothrombinæmia; the prothrombin clotting time was reduced to a near normal level and in one patient hæmorrhage was controlled. No untoward reactions were observed. H. H. K.

Heparin and blood clotting. D. Y. Solandt and C. H. Best (Lancet, 1940, **238**, 1042—1044).—Large doses of heparin in the dog prevent platelet

agglutination only after a delay of 15—50 min. although the effect on clotting time developed rapidly. Even extensive injury to arteries and veins does not produce a max. stimulus to platelet agglutination such as is seen with a scratch on a glass cell through which the blood is made to flow. C. A. K.

Nutritional deficiency of vitamin-*K* in man. H. Scarborough (Lancet, 1940, **238**, 1080).—18 cases of scurvy, beriberi, or pellagra showed a normal prothrombin index by Quick's method, but 4 cases of scurvy showed a reduced prothrombin index by Kark and Lozner's method (A., 1939, III, 959). C. A. K.

Synthetic vitamin-*K* in hypoprothrombinæmia. R. Kark and A. W. Souter (Lancet, 1940, **238**, 1149—1153).—Parenteral administration of 2-methyl-1 : 4-naphthaquinone rapidly restored normal vals. in 12 out of 18 cases of hypoprothrombinæmia, but was ineffective in 12 cases with parenchymatous hepatic disease. C. A. K.

Thromboplastin reagent for determination of prothrombin. A. J. Quick (Science, 1940, **92**, 113—114; cf. A., 1940, III, 378).—A method is given for the prep. of a thromboplastin solution which clots human plasma in 11—12½ sec., rabbit plasma in 6 sec. Washing of the rabbit brain material gives stability and uniform activity to the product, which is stored in vac. in ampoules. Rabbit thromboplastin, the best known source, appears to be sp. for plasma of man, dog, cat, horse, and cow, but not for guinea-pig or birds. E. R. S.

Use of various synthetic compounds exhibiting antihæmorrhagic activity. H. R. Butt, A. M. Snell, A. E. Osterberg, and J. L. Bollman (Proc. Staff Mayo Clin., 1940, **15**, 69—73).—1 : 4-Dihydroxy-2-methyl-3-naphthaldehyde and 2-methyl-1 : 4-naphthaquinone reduce the elevated prothrombin clotting time when administered intravenously or by mouth. In 30 patients treated no untoward reactions were noted following the administration of the compounds by either route. Failure in 3 patients was attributed to severe hepatic damage. H. H. K.

Conversion of prothrombin into thrombin, followed by means of the radioactive phosphorus isotope. E. Chargaff, M. Ziff, and S. S. Cohen (J. Biol. Chem., 1940, **135**, 351—352).—The amounts of P transformed from thromboplastin into thrombin are very small and of doubtful significance. R. L. E.

Micro-determination of blood coagulation time. N. Fiechter (Schweiz. med. Wschr., 1940, **70**, 259).—9 parts of blood are mixed with 1 part of 0·1M-Na oxalate in a 0·15-c.c. pipette and kept at 38°; 0·15 c.c. of thrombokinase and 0·15 c.c. of 0·025M-$CaCl_2$ are added. Coagulation normally takes place within 14—15 sec. A. S.

Heparin as anti-coagulant for permeability studies. F. R. Hunter, L. D. Stringer, and H. D. Weiss (Science, 1940, **91**, 579).—The use of heparin (Glogan; 1 mg. per 10 ml. of blood) is recommended in investigations in which nucleated erythrocytes are subjected to much experimentation. The cells appear to be more nearly normal and have less tendency to stick together in an unusable mass. E. R. S.

Heparin in post-operative pulmonary embolism. R. D. McClure and C. R. Lam (J. Amer. Med. Assoc., 1940, **114**, 2085—2089).—8 cases of post-operative pulmonary embolism were successfully treated by continuous intravenous infusion of heparin, at a rate of 1000—2000 units (10—20 mg.) per hr. C. A. K.

Granulopexic activity of reticulo-endothelial system. A. Cannavà (Arch. Fisiol., 1940, **39**, 458—468).—The fixation of colloidal Au (injected intravenously into rabbits) by the liver was max. after 90 min., and then remained const. over the period of observation (15 days) during which no Au was excreted in the urine or fæces. With amounts between 0·021 and 0·756 g. per kg. the amount fixed by the liver was always 60% of the total injected. Au was present only in the Kupffer cells. S. O.

Mechanism of leucocytosis with inflammation. V. Menkin (Arch. Path., 1940, **10**, 363—373; cf. A., 1940, III, 56). C. J. C. B.

Infectious mononucleosis. A. Bernstein (Medicine, 1940, **19**, 87—159).

Irradiation in lymphomatoid diseases. L. F. Carver (Bull. N.Y. Acad. Med., 1939, **15**, 442—455).

Monocytic leukæmia of Naegeli and Schilling types. C. H. Watkins and B. E. Hall (Amer. J. clin. Path., 1940, **10**, 387—396).—A review of 23 cases of the Naegeli type and 6 of the Schilling type. The so-called Naegeli type is a variant of myelogenous leukæmia; monocytic leukæmia of the Schilling type is probably a separate entity, a variant of leukæmic reticulo-endotheliosis. C. J. C. B.

Chronic lymphatic leukæmia with infiltration into endometrium. J. R. McDonald and J. M. Waugh (Proc. Staff Mayo Clin., 1939, **14**, 465—466).—Report of a case. H. H. K.

Infectious feline agranulocytosis. J. S. Lawrence, J. T. Syverton, J. S. Shaw, jun., and F. P. Smith (Amer. J. Path., 1940, **16**, 333—353).—The clinical, hæmatological, and pathological aspects of a recently discovered virus infection of cats, named infectious feline agranulocytosis, are described. The disease is characterised by marked leucopenia and neutropenia, absence of thrombopenia, and anæmia. The histopathological changes are directly attributable to viral activity, as evidenced by intranuclear inclusion bodies (type A Cowdry), necrobiosis, and proliferation. The most pronounced abnormalities were found in the hæmatopoietic tissues and in the intestinal mucosa. (16 photomicrographs.) C. J. C. B.

White blood count in uræmia. S. Wada (Arb. med. Univ. Okayama, 1940, **6**, 387—411).—Abs. lymphopenia occurs in the terminal phase of uræmia in man and in rabbits made uræmic by ligature of both ureters. H. H. K.

Tuberculosis and myeloblastic reaction. H. Geissler and H. Wurm (Klin. Woch., 1939, **18**, 1212—1214).—Cases of generalised tuberculosis with myeloblastic reaction are apparently late primary infections with a sp. stimulating effect on the bone marrow. M. K.

Differential diagnosis of chronic leukæmia and myeloid-leukæmoid states. N. GINGOLD (Klin. Woch., 1939, **18**, 1217—1218).—Blood-histamine val. was normal in a case of leukæmoid reaction due to drugs, while in 6 cases of chronic myeloid leukæmia the val. was increased 100-fold. M. K.

Relation of lymphocyte count to serum cation content. F. BRANSCHEID and L. EHRHARDT (Klin. Woch., 1939, **18**, 1293—1296).—None was found. M. K.

White blood count in cholæmia. S. WADA (Arb. med. Univ. Okayama, 1940, **6**, 412—424).—Abs. lymphopenia is observed in cholæmia in man and rabbits. The follicles of spleen and lymph glands are atrophied. H. H. K.

Mucolytic activity of diffusing factor preparations. J. MADINAVEITIA, A. R. TODD, A. L. BACHARACH, and M. R. A. CHANCE (Nature, 1940, **146**, 197).—The diffusing potency and mucolytic activity of 6 preps. are compared. It is clear that the assay of diffusing factors by measuring mucolytic activity is unreliable. E. R. S.

Appearance of radioactive iron as hæmoglobin in red cell. Significance of "easily split" iron. L. L. MILLER and P. F. HAHN (J. Biol. Chem., 1940, **134**, 585—590).—Administered radioactive Fe present in the erythrocytes of anæmic dogs was nearly quantitatively present in the hæmoglobin crystallised from the cells. In the easily split Fe fraction of the cells, 3—23% of the total radioactive Fe was found, as much being present 24 hr. after the Fe administration as at periods weeks later. The amount increased, however, after administration of acetylphenylhydrazine. The easily split Fe fraction may be an artifact. A. L.

Serum-iron and liver. G. HEMMELER (Klin. Woch., 1939, **18**, 1245—1247).—Serum-Fe vals. were increased in jaundice. M. K.

Utilisation of iron by anæmic rats. M. S. ROSE (Science, 1940, **91**, 618).—Priority polemics. E. R. S.

Absorption of iron. D. A. K. BLACK, J. POWELL, and L. J. WITTS (Brit. Med. J., 1940, I, 810).—The blood-Fe was not raised in a normal subject after a single massive dose or during continued administration of Fe. C. A. K.

Radio-iron in plasma does not exchange with hæmoglobin-iron in red cells. P. F. HAHN, W. F. BALE, J. F. ROSS, R. A. HETTIG, and G. H. WHIPPLE (Science, 1940, **92**, 131—132).—Feeding radio-Fe to fasting anæmic dogs results in radio-Fe being found in the plasma but not in the red cells. Hæmoglobin solutions from similar dogs were mixed with radio-Fe as Fe^{III} NH_4 citrate and left in a refrigerator for 24 hr.; not more than 1% of hæmoglobin-Fe was radioactive. E. R. S.

Nitrogen, copper, and hæmocyanin content of sera of arthropods. J. B. ALLISON and W. H. COLE (J. Biol. Chem., 1940, **135**, 259—265).—A modification of Redfield's method (A., 1928, 314) for micro-determination of Cu, utilising Foote and Vance's technique (A., 1936, 579), is described. Hæmocyanin is not removed from the serum by clotting and after removal of the clot is the only protein present, the concn. varying widely between individuals. The ratio Cu : protein in the sera of *Limulus polyphemus*, *Homarus americanus*, *Cancer borealis*, and *Callinertes sapidus* is the same (0·0020—0·0024) and vals. for total, non-protein-, and protein-N are given. H. G. R.

Effects of sulphanilamide and sulphapyridine on blood pigments of white rats. P. K. SMITH (Amer. J. med. Sci., 1940, **200**, 183—184).—In white rats that had received orally for 1 month daily doses of sulphanilamide, 700 mg. per kg., small, but significant, amounts of methæmoglobin and somewhat larger amounts of sulphhæmoglobin were found. By comparison with a group of control rats, there was a decrease in total hæmoglobin of about 10%. Under similar conditions a daily dose of sulphapyridine, 1050 mg. per kg., resulted in a similar amount of methæmoglobin without an appreciable amount of sulphhæmoglobin. There was no significant reduction in total hæmoglobin. C. J. C. B.

Hypermagnesæmia without clinical symptoms in dairy cattle. M. W. EVELETH, D. F. EVELETH, and F. E. WALSH (J. Dairy Sci., 1940, **23**, 85—89).—Drought may result in a temporary hypermagnesæmia in cattle without clinical symptoms. J. G. D.

Seasonal variations in level of magnesium in plasma of growing dairy calves. C. W. DUNCAN, C. C. LIGHTFOOT, and C. F. HUFFMAN (J. Dairy Sci., 1940, **23**, 125—134).—Mean plasma vals. varied from 2·55 mg.-% in November to 2·25 in June. The lowest vals. were found when there were more than 8 hr. of sunshine per day and the mean temp. above 55° F. J. G. D.

Lipin content of blood in diabetics with retinal changes. K. VOM HOFE (Klin. Woch., 1939, **18**, 1292). M. K.

Lipin content of blood in epidemic dropsy. R. N. CHOPRA, D. C. MAZUMDAR, and A. C. ROY (Indian J. Med. Res., 1940, **27**, 937—945).—In acute cases of epidemic dropsy the average cholesterol was slightly higher than normal and markedly higher in chronic or recurrent cases or those having sarcoids. H. B. C.

Significance of carotene and vitamin-*A* level in serum. W. THIELE and J. SCHERFF (Klin. Woch., 1939, **18**, 1208—1211).—Serum-vitamin-*A* is diminished in chronic malignant disease and hyperthyroidism. The high serum-*A* in diabetes is attributed to the existing lipæmia. M. K.

Serum-phosphatase in bone tumours. S. CADE, N. F. MACLAGAN, and R. F. TOWNSEND (Lancet, 1940, **238**, 1074—1075).—The serum-phosphatase in 28 cases of bone tumours reflected the degree of osteoblastic activity, and was of val. in following the treatment of osteogenic sarcoma, especially in detecting metastases. C. A. K.

Revaluation of Goodhart and Sinclair's method for determination of blood-cocarboxylase. R. GOODHART (J. Biol. Chem., 1940, **135**, 77—84).—All the cocarboxylase of the blood occurs within the cells, and it is advisable to modify the earlier method

by carrying out determinations on washed cells in the presence of 50 μg. of aneurin. The normal blood-cocarboxylase in boys is 7·0±1·53 μg. per 100 c.c. P. G. M.

Determination of serum- and pseudohæmoglobin-iron with *o*-phenanthroline. G. Barkan and B. S. Walker (J. Biol. Chem., 1940, **135**, 37—42).—Serum, plasma, or whole blood is incubated with aq. 1·2% HCl, 20% trichloroacetic acid is added to ppt. protein, and the whole is centrifuged. The Fe in the supernatant fluid is reduced to Fe" with 1% hydrazine sulphate solution in 2M-acetate buffer, and it is determined by means of the red complex formed with *o*-phenanthroline (Evelyn photo-electric colorimeter). Hæmoglobin is pptd. by trichloroacetic acid, whilst Fe of pseudohæmoglobin is split off during the incubation. P. G. M.

Separation of complement from fresh guinea-pig serum. E. E. Ecker, L. Pillemer, C. B. Jones, and S. Seifter (J. Biol. Chem., 1940, **135**, 347—348).—The prep. of complement is described and it is characterised as a constituent of serum-globulin. R. L. E.

Relation of plasma-potassium level to metabolic activity. J. Brewer (Amer. J. Physiol., 1940, **129**, 245—251).—In cats and dogs low environmental temp. increases plasma-K in normal and demedullated animals. Dinitrophenol increases metabolism, body temp., and plasma-K in anæsthetised animals; this increase is not prevented by curarisation, hepatectomy, or both together. Depression of body temp. after decerebration is associated with a fall in plasma-K. Decrease of body temp. and plasma-K caused by decerebration may be annulled by dinitrophenol. There is a positive correlation between plasma-K and metabolic activity. M. W. G.

Blood-lactic acid and external temperature. J. Truka-Tuzson (Dtsch. med. Wschr., 1940, **66**, 151).—The blood-lactic acid content in normal subjects is lowest in December to March and highest between July and September. There is close parallelism with the external temp. A. S.

Uric acid content in blood and urine in health and disease. K. Brøchner-Mortensen (Medicine, 1940, **19**, 161—229).

Micro-determination of lipin-amino-nitrogen in dog's blood. S. Kan (J. Biochem. Japan, 1940, **31**, 55—59).—A modification of the (Van Slyke) method described by Takata (A., 1937, III, 84) is used. Normal dog's blood contains 1·6 mg.-% of lipin-amino-N. F. O. H.

(vi) VASCULAR SYSTEM.

Malpighi's contribution to knowledge of circulation. T. E. Keys and F. A. Willius (Proc. Staff Mayo Clin., 1940, **15**, 378—379). H. H. K.

Cardiac vagus nerve of frog as affected by sodium *N*-hexylethylbarbiturate (Ortal). C. M. Gruber, jun., and C. M. Gruber (Amer. J. Physiol., 1940, **129**, 14—16).—Na *N*-hexylethylbarbiturate in dil. solutions (0·001M., 0·002M.) applied to the frog's heart paralyses the post-ganglionic vagal fibres. M. W. G.

Electrocardiographic diagnosis of auricular changes in man by chest leads. C. Ernst (Klin. Woch., 1939, **18**, 1188—1190). M. K.

Electrical axis of heart by direct observation. W. H. Jordan (Physical Rev., 1938, [ii], **54**, 235—236).—A circuit that permits the direction of the heart axis to be seen directly from observation of the trace of the electron beam on a standard cathode-ray tube has been developed. L. S. T.

Action of osmotically-active substances on heart rate. C. R. Spealman (Amer. J. Physiol., 1940, **129**, 293—297).—Within certain limits variation of the urea or sea-water concn. of the solution (0·5M-urea in 50% sea-water) causes no change in rate of isolated dogfish heart. Glucose decreases the heart rate. Ethyl alcohol, urea, propylene glycol, and glycerol (0·1M.) cause no change in frog heart rate; arabinose, glucose, mannitol, and sucrose (0·1M.) decrease the heart rate. Only these substances which are osmotically active slow the heart. M. W. G.

Effect of thyroidectomy on [guinea-pig] heart. V. Kruta and J. Velický (Klin. Woch., 1939, **18**, 1223—1224).—Contraction of isolated artificially stimulated auricles was prolonged. M. K.

Effects of general anæsthetics and sympathomimetic amines on cardiac automaticity. W. J. Meek (Proc. Staff Mayo Clin., 1940, **15**, 237—240).—A lecture. H. H. K.

Atropine in congenital complete heart-block. G. M. Currie (Brit. Med. J., 1940, I, 769—770).—Atropine produced 3 : 1 partial heart-block in a case of congenital complete heart-block. C. A. K.

Modification of hæmodynamic effects of acetylcholine by ergotamine. C. R. Linegar (Amer. J. Physiol., 1940, **129**, 53—68).—Dogs and cats anæsthetised with nembutal, sigmodal Na, urethane, or ether were used. Ergotamine causes cardiac slowing after atropine. Pressor responses to adrenaline after atropine are not reduced by ergotamine. Pressor responses to acetylcholine after atropine or atropine + eserine are converted into depressor by 0·5—2·0 mg. of ergotamine. This reversal also occurs after adrenalectomy. Ergotamine does not inhibit liberation of "sympathin" by the action of acetylcholine in sympathetic ganglia; it decreases the vasodilator response to acetylcholine in non-atropinised animals, and increases the vasodilator reponse in atropinised animals. M. W. G.

Nature of respiratory waves in arterial blood pressure. R. H. Trimby and H. C. Nicholson (Amer. J. Physiol., 1940, **129**, 289—292).—When artificial ventilation was carried out by rhythmically decreasing the pressure on the external surface of the lungs in dogs without altering the pressure on other thoracic structures, well marked respiratory waves in blood pressure were observed, characterised, after a slight lag, by an inspiratory fall and an expiratory rise in pressure. Artificial ventilation produced by

rhythmically forcing air into the lungs through the bronchi reversed these effects. During inflation of the lungs by a decrease in the pressure on their external surface there is an increase in the capacity of the pulmonary vascular bed which is partly responsible for the inspiratory fall in blood pressure normally seen and delays the rise in pressure resulting from increased filling of the right atrium during inspiration. M. W. G.

Interchange of skin temperatures and regulatory heat control of upper and lower extremities after splanchnic sympathectomy. C. Sheard, G. M. Roth, J. D. Love, and B. T. Horton (Proc. Staff Mayo Clin., 1939, **14**, 508—512). H. H. K.

Use of oscillating beds in treatment of peripheral occlusive arterial disease. N. W. Barker (Proc. Staff Mayo Clin., 1939, **14**, 618—619).—Cases with intermittent claudication did not benefit. 12 of 13 cases with so-called rest or pretrophic pain without ulceration or gangrene obtained relief of pain. Complete relief of pain was obtained in 9 of 15 cases of ischæmic neuritis and was maintained after treatment was discontinued. Of the patients with ulceration, gangrene, and severe pain, 32 had relief of pain while on the bed but only 22 maintained this improvement after treatment was discontinued. In these 22 cases the gangrenous and ulcerative lesions healed, but some of these had additional sp. treatment. H. H. K.

Less common diagnostic pitfalls with reference to cardiac diseases. F. A. Willius (Proc. Staff Mayo Clin., 1939, **14**, 488—490).—Report of 2 cases. H. H. K.

Stroke volume of heart and cardiac weakness. F. Meyer (Klin. Woch., 1939, **18**, 1205—1208).—Heart stroke vol. was normal in many patients with clinical decompensation. Venous congestion appeared first, whilst the cardiac output was unaltered. M. K.

Cardiac output in congestive heart failure and in organic heart disease. H. J. Stewart, N. F. Crane, R. F. Watson, C. H. Wheeler, and J. E. Feitrick (Amer. int. Med., 1940, **13**, 2323—2339).—In congestive heart failure (86 cases of different origin) there is a decrease in cardiac output per min., per sq. m. of body surface (cardiac index), and per beat; prolongation of the circulation time occurs and the venous pressure may rise; the size of the heart increases. Since the output per beat is decreased and the heart size is larger, the work per beat is no longer commensurate with the size of the heart. With restoration of compensation the functional capacity is increased towards a normal level but does not usually attain the level of which it was capable before the onset of failure. C. J. C. B.

Value of ether circulation time in diagnosis of right heart failure. S. Baer and H. J. Isard (Amer. J. med. Sci., 1940, **200**, 209—211).—Ether arm-to-lung circulation times were determined in 329 patients. The ether time in 184 normal patients was 3·5—9·4 sec. (average 5·8 sec.). Only 6 of the 184 patients had times above 8 sec. In 26 patients with proven pulmonary disease, the ether time was 2·5—10 sec. (average 6·1 sec.); in only 2 of the 26 patients did the times exceed 8 sec. In 90 patients with cardiac disease, the ether time was 4—19 sec. The average in patients without heart failure was 5·8 sec., in those with heart failure 10·2 sec. The ether test is of val. in the diagnosis of right heart failure, and in its differentiation from conditions simulating right heart failure. C. J. C. B.

Hypertension—the problem, the study, the future. S. W. Mulholland (Bull. N.Y. Acad. Med., 1940, **16**, 244—255).

Renal arteriosclerosis with hypertension. C. F. Stewart (J. Amer. Med. Assoc., 1940, **114**, 2099—2101).—A case of arteriosclerosis of the renal artery orifices with severe hypertension is reported, with autopsy details. C. A. K.

Hereditary factor and subsequent development of hypertension. E. A. Hines, jun. (Proc. Staff Mayo Clin., 1940, **15**, 145—146).—A review. H. H. K.

Relationship of hypertension to renal disease. N. M. Keith (Proc. Staff Mayo Clin., 1940, **15**, 465—467).—A lecture. H. H. K.

Relationship of hypertension to renal neoplasm. B. T. Horton (Proc. Staff Mayo Clin., 1940, **15**, 472—474).—Report of a case. H. H. K.

Hypertension and chronic atrophic pyelonephritis. N. W. Barker and W. Walters (Proc. Staff Mayo Clin., 1940, **15**, 475—477).—Report of cases. H. H. K.

Hypertension and surgical kidney. W. F. Braasch, W. Walters, and H. T. Hammer (Proc. Staff Mayo Clin., 1940, **15**, 477—478).—A review. H. H. K.

Production of pressor substance by totally ischæmic kidney. A. C. Taquini (Amer. Heart J., 1940, **19**, 513—518; cf. A., 1939, III, 239). G. Sch.

Lipœdema of legs. E. V. Allen and E. A. Hines, jun. (Proc. Staff Mayo Clin., 1940, **15**, 184—187).—A syndrome characterised by fat legs and orthostatic œdema. H. H. K.

Complete occlusion of abdominal aorta. H. Gross and B. Philips (Amer. J. med. Sci., 1940, **200**, 203—208).—7 cases of complete occlusion of the aorta at its bifurcation, observed during the course of 5350 autopsies, are described. Of these, 4 were patients with atherosclerosis of the coronary arteries and aorta, 2 with diffuse vascular disease involving the venous system, and 1 with chronic rheumatic cardiovalvular disease, auricular fibrillation, and a ball-valve thrombus of the left auricle. C. J. C. B.

Congenital arteriovenous fistulæ in children. C. E. Ward and B. T. Horton (J. Pediat., 1940, **16**, 746—766).—44 cases of vascular anomalies of the arteriovenous type occurring in children are recorded. The intracranial vessels were involved in 4, the scalp, face, and neck in 4, the upper extremities in 9, and the lower extremities in 25 subjects. In addition, 2 patients exhibited hemihypertrophy of half of the body. C. J. C. B.

Sclerosis solutions. L. Isaak (Arch. Dermat. Syphilol., 1940, **42**, 86—96).—A method is presented

which shows photographically vascular changes in rabbit's ear after injection of sclerosing solutions. The min. vol. of a solution necessary to obliterate a vein can be found easily by the rabbit experiment. By multiplying the amount obtained by a figure varying from 10 to 30 the vol. of solution which will be effective in the treatment of varicose veins can be calc. C. J. C. B.

Venous air embolism. E. von Balogh (Dtsch. med. Wschr., 1940, **66**, 149—151).—Intravenous injection of 2 c.c. or more of air in rabbits produces contraction of the branches of the pulmonary artery and increase in pulmonary pressure; there is finally failure of the right ventricle. Amyl nitrite was beneficial. A. S.

Action of eupaverin in arterial embolism. F. Schrimpl (Dtsch. med. Wschr., 1940, **66**, 148—149).—Repeated intravenous injections of large doses of eupaverin (0·15 g.) are recommended in the treatment of peripheral arterial embolism. A. S.

Relation of anatomic pattern to pathologic conditions of coronary arteries. M. J. Schlesinger (Arch. Path., 1940, **30**, 403—415).—The coronary artery pattern is not identical in any 2 human hearts. 3 distinctive anatomic and functional groups are recognised. In group I (40% of hearts) the right coronary artery predominates in the blood supply of the heart; these hearts are intermediate to the other 2 groups in their reaction to coronary sclerosis. In group II (34% of hearts) the coronary artery blood supply of the heart is balanced between the right and left coronary arteries; these hearts suffer least from the effects of coronary sclerosis. In group III (18% of hearts) the left coronary artery predominates in the blood supply of the heart; these hearts suffer most from the effects of coronary sclerosis. C. J. C. B.

Rheumatic disease of tricuspid valve. M. D. Altschule and E. Budnitz (Arch. Path., 1940, **30**, 7—25).—Rheumatic disease of the tricuspid valve is characterised by distension and increase in diameter of all visible veins, hepatomegaly (+ cirrhosis), systolic (and in the absence of auricular fibrillation presystolic) venous and hepatic pulsations, cyanosis, jaundice, enlargement of the heart to the right, and murmurs over the area of the tricuspid valve. The cardiac output is normal when congestive failure is not present but the venous pressure is elevated, proving that the rise in venous pressure is due to mechanical obstruction to the cardiac input. When decompensation occurs, the output of the heart diminishes and the venous pressure rises above its former high level. C. J. C. B.

Circulation and shock. R. J. S. McDowall (Brit. Med. J., 1940, I, 919—924).—A lecture. C. A. K.

Reversed coarctation and vasomotor gradient. H. M. Giffin (Proc. Staff Mayo Clin., 1939, **14**, 561—565).—Report of a cardiovascular anomaly with symptoms of brain tumour. H. H. K.

Importance of postural vascular studies in exhaustive states. A. R. MacLean, B. T. Horton, and F. P. Moersch (Proc. Staff Mayo Clin., 1939, **14**, 620—624).—Report of 3 cases. H. H. K.

Factors governing incidence of cerebro-vascular crises. D. L. Dozzi (Amer. J. med. Sci., 1940, **200**, 259—264).—The clinical and autopsy records of 1000 consecutive, unselected cases were studied to determine any correlation between cerebro-vascular lesions and heart disease, hypertension, arrhythmia, age, sex, and race. The following conclusions are reached. Hypertension is probably the most important single ætiological factor in cerebro-vascular crises. Heart disease in general is a major ætiological agent. There is a gradual, progressive increase in incidence with advancing age, excepting the younger group associated with rheumatic heart disease. Cerebro-vascular lesions occur 3 times as frequently in females as in males and nearly twice as often in whites as in negroes. Syphilis *per se* has little influence; the % found with cardiovascular syphilis approaches that of heart disease in general. C. J. C. B.

Circulation of hæmolymph in wings of cockroach *Blatella germanica*, L. I. Normal wings. S. Clare and O. E. Tauber (Iowa State Coll. J. Sci., 1940, **14**, 107—127).—Active circulation of hæmolymph occurs in the wings of *B. germanica*. Hæmolymph enters and flows along the costal wing margins and flows back to the body along the inner wing margin. This circulation is necessary to maintain the wings in a healthy condition and is possibly directly concerned with respiration. E. M. W.

(vii) RESPIRATION AND BLOOD GASES.

Intravenous oxygen. I. Singh and M. J. Shah (Lancet, 1940, **238**, 922—923).—Intravenous O_2 (10—20 c.c. per min.) was safely given under normal atm. pressure to 6 cases of pneumonia. C. A. K.

Value of high concentrations of oxygen in surgery. C. W. Mayo (Proc. Staff Mayo Clin., 1940, **15**, 13, 193—194). H. H. K.

B.L.B. oxygen inhalation apparatus. W. M. Boothby, W. R. Lovelace, II, and A. Vihlein (Proc. Staff Mayo Clin., 1940, **15**, 194—206).—Improvements in design and efficiency are introduced, demonstrated by studies on O_2 % in alveolar air. H. H. K.

Determination of blood gases by Haldane's method. C. Ernst (Klin. Woch., 1939, **18**, 1222—1223).—A modification of Haldane's apparatus, by which 4 double analyses instead of one can be made simultaneously. M. K.

Respiratory adjustments to oxygen-lack in presence of carbon dioxide. D. B. Dill and N. Zamcheck (Amer. J. Physiol., 1940, **129**, 47—52).—Regulation of respiration and the properties of blood were studied in 2 healthy young men exposed to atm. deficient in O_2 and containing various concns. of CO_2. There were significant differences between the 2 subjects. The addition to inspired air of CO_2 renders a given low p_{O_2} more tolerable, because of arterial saturation and reduced disturbance of acid-base balance, but the gain in O_2 saturation is less than results from an equal increase in p_{O_2}, the p_{CO_2} remaining const. M. W. G.

Drugs in asthma. F. M. Rackemann (J. Amer. Med. Assoc., 1940, **114**, 1998—2002).—A review. C. A. K.

Neuropathic pulmonary œdema. S. Farber (Arch. Path., 1940, **30**, 180—197).—Acute pulmonary œdema is produced in recently vagotomised rabbits within a few min. after intravenous infusion of physiological saline in amounts and at rates which cause only moderate pulmonary congestion in intact rabbits or atropinised rabbits with intact vagi. When intact or atropinised rabbits in which moderate pulmonary congestion has been produced by rapid intravenous infusion of saline are subjected to bilateral cervical vagotomy followed by infusion of small additional amounts of saline, acute pulmonary œdema is immediately produced. Rapid intravenous infusion of saline solution into rabbits subjected to unilateral vagotomy causes either moderate congestion or congestion + slight œdema. Tracheotomy had no effect on these results. The action of atropine does not duplicate the consequences of bilateral cervical vagotomy in respect to the production of acute pulmonary œdema. The plasma vol., red blood cell vol., blood vol., and hæmatocrit reading became considerably reduced during the development of acute pulmonary œdema caused by bilateral cervical vagotomy. The erythrocyte level may be above or below normal, depending on whether pulmonary hæmorrhage occurs as a complication of the severe œdema and congestion. C. J. C. B.

Radiation pneumonitis. Experimental and pathologic observations. S. Warren and O. Gates (Arch. Path., 1940, **30**, 440—460).—The lung reacts to radiation as do superficial tissues, with congestion, œdema, and degenerative changes of cells and intercellular substance. Certain phases of the reaction in the lung are distinct from other forms of pulmonary inflammation. These early alterations have been followed in laboratory animals and man. The earliest phases of reaction are reversible, producing no permanent change. (14 photomicrographs.) C. J. C. B.

Function of chlorocruorin. R. F. Ewer and H. M. Fox (Proc. Roy. Soc., 1940, **129, B**, 137—153).—The consumption of O_2 by *Sabella pavonina* decreases soon after the concn. of dissolved O_2 in sea-water falls below the val. corresponding with air saturation at 10° and 17°, whilst above air saturation at 17° there is no appreciable increase in O_2 consumption. Conversion of the chlorocruorin of *S. pavonina* into carboxychlorocruorin causes a decrease in O_2 consumption which is not due to action of CO on cell enzymes. It is concluded that chlorocruorin acts as an O_2 carrier, and not as an O_2 store, at all temp. and O_2 pressures. J. N. A.

Functional dyspnœa. F. A. Willius (Proc. Staff Mayo Clin., 1939, **14**, 553—554).—A lecture. H. H. K.

Influence of high-altitude flights on whooping-cough. F. Pflug and H. Jungheim (Klin. Woch., 1939, **18**, 1247—1248).—The majority of 136 patients of various ages showed improvement within 5 days. In 46% the attacks disappeared after 8 days. In 11 patients no improvement was observed. M. K.

Determination of carboxyhæmoglobin with König-Martens spectrophotometer. A. Luszczak (Abh. Gesamtgeb. Hyg., 1936, No. 22, 69—98; Chem. Zentr., 1937, i, 4404).—The Heilmeyer extinction coeff. gives low results with low carboxyhæmoglobin saturation vals. The quotient varies with oxyhæmoglobin solutions from different blood specimens. Spectrophotometric results with high carboxyhæmoglobin contents should be corr. for its dissociation. A. J. E. W.

(viii) MUSCLE.

Biochemistry of unsaponifiable substances. II—IV. Lipin and other changes in muscles after ligature of blood vessels in normal and cholesterol-fed rabbits. S. Saito (J. Biochem. Japan, 1940, **31**, 143—153, 155—162, 163—180).—II. The water content of the back-leg muscles in normally fed rabbits after ligature of femoral and sciatic vessels increases for 6—9 days and then returns to normal vals. on about the 20th day; the fatty acid and cholesterol contents behave similarly, the increase in cholesterol being specially marked when the degree of necrosis is high. The phosphatide content is diminished.

III. With cholesterol-rich diets, the degree of necrosis and increase in water content are less, whilst the increase in cholesterol content is greater, than those in normally fed rabbits.

IV. After ligature of the blood vessels, the contents of glycogen, inorg. and acid-sol. P, phosphagen, creatine, and total sol., residual, and sol. protein-N in the peripheral muscles are decreased. The return to normal vals. is more rapid when cholesterol is administered. F. O. H.

Crystalline albumin component of skeletal muscle. K. Bailey (Nature, 1940, **145**, 934—935).—A cryst. albumin obtained from 2·7—3·1M-$(NH_4)_2SO_4$ solutions (p_H 5·8 with H_2SO_4) of rabbit muscle is described. Sedimentation and diffusion experiments indicate a mol. wt. of 155,000. The crystals may be identical with the myogen *B* obtained from the mother-liquors of myogen *A* (cf. A., 1939, III, 826). L. S. T.

Effect of changes in muscle-electrolyte on response of skeletal muscle to tetanic stimulation with particular reference to potassium. H. C. Millar and D. C. Darrow (Amer. J. Physiol., 1940, **129**, 264—270).—K within the muscle cell can be varied without interrupting neuromuscular connexions by intravenous injection of K salts. Using these methods the response of the muscle to repeated tetanic stimulation was studied in male albino rats. There is no direct relation between the muscle- and serum-K and the response to tetanic stimulation. The results do not support the belief that the muscular fatigue of adrenal insufficiency is specifically related to alterations in muscle- or serum-K. M. W. G.

Radioactive phosphorus as tracer in anaërobic muscular contraction. J. Sacks (Amer. J. Physiol., 1940, **129**, 227—233).—No evidence was found that the interchanges of PO_4''' groups postulated by the Embden-Meyerhof scheme take place in contracting

muscle. Neither phosphocreatine nor adenosine triphosphate takes part in the formation of lactic acid within the muscle cell. The evidence suggests that the function of phosphocreatine hydrolysis in contraction is to supply alkali for the neutralisation of lactic acid, and that the formation of hexose monophosphate is a supplementary source of energy under anaërobic conditions when the lactic acid mechanism is inadequate. M. W. G.

Analysis of effect of carbon monoxide on respiration of frog skeletal muscle. J. N. Stannard (Amer. J. Physiol., 1940, **129**, 195—213).—It is confirmed that CO stimulates frog muscle respiration and that the stimulation is due to oxidation of the CO to CO_2. The excess O_2 utilisation due to CO is unaffected or not prevented by numerous substances which increase the normal respiration to high levels. Lactate, pyocyanine, KCl, and *o*-chlorophenol-indophenol permit increases by CO above the prevailing rate of respiration, but glucose, methylene-blue, *p*-phenylenediamine and Nadi reagent, and caffeine do not. In some cases the oxidation of CO is superimposed on inhibition of the cytochrome–cytochrome oxidase system. CO is oxidised in muscle by enzymes separable from the resting and activity systems, but similar to the latter at least. The effect of CO on muscle is twofold, consisting under certain conditions of inhibition of the cytochrome–cytochrome oxidase system and superimposed CO burning. M. W. G.

Electrical excitability of mammalian striated muscle. A. Rosenblueth [with P. O. Therman and K. Lissak] (Amer. J. Physiol., 1940, **129**, 22—38).—The electrical excitability of both nerve and muscle decreased in cats (dial) and pithed frogs after some min. of repetitive stimulation whether or not neuromuscular transmission fatigue developed. The phenomenon was reversible. No change of muscular excitability was found when prolonged stimulation at 60 per sec. led to the appearance of renewed transmission following fatigue. Complete curarisation occurred without any change of the muscular electrical excitability. Curare decreased excitability. Although prostigmine did not modify muscular excitability, it increased it when injected after curare. The responses of muscles to single nerve volleys were repetitive after prostigmine, but those to direct stimulation were single. The electrical theory of neuromuscular transmission fails to explain the 4th and 5th stages, the block of transmission produced by curare, and the repetitive character of the responses to nerve volleys after prostigmine. M. W. G.

Origin of injury potential of muscle. I, II. Y. Sugi (Japan. J. Med. Sci., III, 1940, **6**, 293—329, 331—368).—I. The distribution of the injury potential along a parallel-fibred muscle injured at one end or both ends, or in an intermediate region, and placed on or in a conducting medium was measured. The positivity is max. on the intact edge near the injury, and even moves with its peak into the injured field at the obtuse-angled side of a flat oblique cut where the max. negativity is shifted towards the acute-angled end ("inclination" potential). An intermediate band of injury (heat) has max. negativity in its centre. If ½ the muscle is coagulated by heat (60°) positivity and negativity are evenly distributed on both sides of the line of demarcation with their max. close to it. Replacement of the dead half, except a thin layer near the demarcation, by a roll of wet filter-paper leaves the potential distribution unchanged, *i.e.*, the two halves act as leads for the p.d. set up at the cross-section of demarcation. The electrical field in a circular plane around the injured muscle shows the same characteristic distribution of positive and negative max., the equipotential lines converging towards the narrow zone of the muscle between the max., *i.e.*, the region of zero potential. This indicates an electrical asymmetry located either in the injured or the adjacent normal layer, the potential distribution along the muscle actually being that of the electrical field. In experiments with Cu and Zn pieces in various relative positions as models of the injured muscle, the electrical field obtained is identical with that of the muscle only if the electrical double layer, positive inside and negative outside, is established at the end, corresponding with the injured surface.

II. When the cut end of a muscle just touching a saline surface is gradually lowered into the solution, the p.d. between fluid and muscle drops abruptly; in the reverse case no change occurs until the cut end touches the surface of the fluid. When the artificial shunt formed by wrapping the prep. in wet filter-paper is removed step by step the (increasing) max. positivity shifts towards the cut end so that with infinitely increasing shunt resistance it would approach the zero potential line through the injured region. All these conditions can be reproduced with a model the double layer of which is situated at the "injured" surface. (There is no difference between a model composed of small units and a single large model.) Generally, varying the conductivity of the medium, the position of the prep. or model relative to it, the size of the injury, or the dimension of the source of potential leads to identical variations of potential distribution if the appropriate model is used. Other models do not satisfy these conditions. The potential distribution obtained for various models conforms with the results derived from the field theory. It is concluded that the injury potential arises predominantly, if not entirely, in the injured surface. H. Ro.

Depression of neuro-muscular transmission in a crab by phenothiazine. H. O. J. Collier (Nature, 1940, **146**, 232—233).—If neuro-muscular function in the isolated walking leg of the shore crab (*Carcinus mœnas*) perfused with phenothiazine (1 in 1·5—10 million) is compared with that perfused with crab's Ringer solution, it is found that: (1) threshold potential for excitation of the nerve is raised; (2) the max. tension obtainable with high-frequency stimulation is little reduced; (3) functional transmission is depressed, and the effect is partly reversible. E. R. S.

Dynamic constants of human muscle. A. V. Hill (Proc. Roy. Soc., 1940, **B**, **128**, 263—274).—Experiments with an inertia wheel show that human arm muscles behave in accordance with the characteristic equation of muscle (Hill) as modified to meet the

case of a const. mass accelerated instead of a const. force overcome at uniform speed. It is probable that the abs. val. of P_0/a cannot be very far from 4, which is its mean val. in frog muscle. F. B. P.

Nerve–muscle specificity in forelimb of *Triturus*. J. Piatt (J. Morph., 1939, **65**, 155—183).—Regenerating forelimb nerves in adults do not demonstrate a rigid nerve–muscle specificity. There is apparently no inherent attractive force within any muscle which favours a rigid selective reinnervation, neither is there an inherent antagonism which precludes foreign innervation. Any degree of nerve–muscle specificity obtained is probably due to the fact that the general nerve pattern itself is approx. normal. Mechanical factors directly influence the regulation of the general nerve pattern. J. D. B.

Vitamin-*E* and muscular dystrophies. S. Stone (J. Amer. Med. Assoc., 1940, **114**, 2187—2191).—Vitamin-*E* produced improvement in 5 cases of muscular dystrophy (gain in strength, disappearance of fatigue, and development of normal muscle texture) and in 2 cases of muscular atrophy who showed increased regeneration of muscle tissue. C. A. K.

Muscle lesions simulating visceral disease. J. B. Harman and R. H. Young (Lancet, 1940, **238**, 1111—1113).—24 cases of muscular lesions in the back showed pain in the front of the abdomen and chest simulating visceral disease. C. A. K.

(ix) NERVOUS SYSTEM.

Alterations in Gasserian ganglion cells and their association with senescence in man. R. C. Truex (Amer. J. Path., 1940, **16**, 255—268).—Gasserian ganglia obtained at autopsy from 10 individuals, without severe ante-mortem clinical symptoms or localised post-mortem changes, were studied. Nerve arborisations and plexus formations occur in the ganglia at all ages and represent neither degenerative nor regenerative attempts. Fatty degeneration is responsible for the loss of many neurones after middle age, and may be due to associated vascular disturbances. Pigmentation is variable and shows little correlation with age. Calcification is most common after 40 years of age. (21 photomicrographs.) C. J. C. B.

Number of neurites in dorsal and ventral roots of cats. F. W. Holmes and H. A. Davenport (J. comp. Neurol., 1940, **73**, 1—5).—The no. of cells in dorsal root ganglia was checked against the no. of fibres in their roots in all the segments of one side of 13 cats. The agreement was essentially 1 : 1. The total no. of fibres in all the spinal roots of one side was 650,000, of which 535,000 were dorsal and 115,000 ventral, *i.e.*, a dorsal to ventral ratio of 4·5 : 1. Unmyelinated fibres in the ventral root ranged between 2·2 and 9·8% and were present in all segments. The techniques used were Davenport's Ag stain for fibres and cresyl-violet for nerve cells and the strip method for counting fibres and cells. J. D. B.

Decrease in human neurones with age. E. Gardner (Anat. Rec., 1940, **77**, 529—536).—The no. of fibres in homologous dorsal and ventral roots varies considerably within each decade. Decade averages computed for the 9th thoracic dorsal root show a gradual decline in the no. of myelinated fibres from the 4th to the 8th decade. A similar decrease is not apparent in the 9th decade. Ganglion cell counts show a rise in no. from the 4th to the 5th decade followed by a sharp fall to the 7th decade. With increasing age the pigment of ganglion cells becomes more abundant and occurs in more cells. Older ganglia exhibit the atypical "frayed cells" of Cajal indicative of neurone decay due to age or degenerative lesions. W. F. H.

New staining technique for demonstration of capsular cells of sympathetic nervous system. R. H. Quade (Proc. Staff Mayo Clin., 1939, **14**, 555—559).—Capsular cells of sympathetic ganglia can be demonstrated by a new staining mixture (Fe gallate stain) the main constituents of which are $FeCl_3$ and gallic acid. H. H. K.

Histochemical study of neurodermatitis : micro-incineration and spectrographic analysis. M. F. Engman and R. C. MacCardle (Arch. Dermat. Syphilol., 1940, **42**, 109—111).—There is a consistent variation in mineral content (especially Mg deficiency) and topographic distribution peculiar to the entire skin of patients with neurodermatitis, as compared with skin both from normal subjects and from patients with a variety of other cutaneous diseases. C. J. C. B.

Neurological complications of serum therapy. A. R. Thompson and J. B. L. Tombleson (Brit. Med. J., 1940, I, 1015—1016).—2 cases of neurological complications following anti-scarlatinal serum are reported. C. A. K.

Nerve stimulation with electronic saturation currents. M. Suzuki (Japan. J. Med. Sci., III, 1940, **6**, 257—275).—The saturation current of an electron tube remains undiminished when passed through a polarisable structure and, therefore, permits almost ideal rectangular shocks to be generated. The chronaxie of frog's nerve (*Rana nigromaculata*) measured with saturation currents is double that determined with galvanic current, with the cathode in either fluid or air. The observed portions of the strength–duration curves (0·1—6 m-sec.) follow G. Weiss' formula, *i.e.*, the *it–t* relation gives straight lines which are parallel in the two cases. The rheobases are not comparable since they are measured as intensities in the 1st and as p.d. in the 2nd case. The strength–duration curve obtained with saturation currents is thought to represent the true reaction of the tissue to genuine rectangular shocks. It is suggested that, in effect, they are comparable with steadily increasing galvanic currents which have a longer utilisation time than the actually peaked ordinary direct current pulses. H. Ro.

Cathodal depression in refractory period of nerve. T. Otani, S. Usio, and S. Ono (Japan. J. Med. Sci., III, 1940, **6**, 277—292).—The recovery curve of nerve tested with a first proximal descending shock and a second distal ascending shock shows a kink supposed to be due to a reversal of Pflüger's law, *i.e.*, cathodal depression and anodal excitation, in early

recovery. With the 2nd shock descending the interposed cathode may block the anodal impulse completely until recovery has proceeded sufficiently. A shock strength which normally gives cathodal excitation seems to produce cathodal depression in the first part of the relatively refractory period with (submax.) anodal excitation while in the subsequent part the nerve reacts normally. H. Ro.

Ascorbic acid and vagus excitability. L. Cioglia and F. Infantellina (Arch. Fisiol., 1940, **39**, 487—496).—A more detailed account of work already noted (A., 1940, III, 392).

Spinal shock. A. van Harreveld (Proc. Nat. Acad. Sci., 1940, **26**, 65—67).—Monkeys subjected to ligature of the spinal cord around the dura at the level of Th 9–10 followed immediately by asphyxia of the spinal cord developed high reflex activity within a few hr. E. M. W.

Nature of first visible contractions of forelimb musculature in rat fœtuses. W. L. Straus and G. Weddell (J. Neurophysiol., 1940, **3**, 358—369).—The earliest visible contractions of skeletal muscle in the living, intact rat fœtus were produced by electrical stimulation during the 16th day of gestation. There is strong suggestion that extramuscular factors may be influencing the nature of the muscular response; neuromuscular transmission, on the efferent side at least, is potentially effective although the nerve-endings themselves are primitive in form. S. Cr.

Tonic neck reflex in newborn infants. J. Mehlman (J. Pediat., 1940, **16**, 767—769).—40% of 200 newborn infants showed characteristic tonic neck reflex; 41% of the positive reactions occurred in infants less than 2 days of age. 27 infants who were tested twice, once during the first day and again on the 8th day, showed inconstant responses. Both positive and negative results were elicited in 2 Mongolian idiots. C. J. C. B.

Distribution of affected nerve cells in amyotonia congenita. J. L. Conel (Arch. Path., 1940, **30**, 153—164).—The brain, spinal cord, and dorsal root ganglia of an infant 5½ months old with clinical evidences of amyotonia congenita showed pathological changes only in nerve cells consisting of a gradual degeneration of the cell bodies; this is accompanied by corresponding loss of myelin from the axons. Affected cells were found among the Betz cells, lateral nucleus of thalamus, somatic efferent nuclei of the oculomotor, trochlear, and abducens nerve, visceral efferent nuclei of the facial, glossopharyngeal, vagus, and accessory nerves, Deiters' nucleus, somatic motor nucleus of the hypoglossal nerve, motor cells in the formatio reticularis and nucleus supraspinalis, Clarke's column, anterior atoms of spinal cord, and dorsal root ganglia. Affected neurones reported here for the first time are in the nucleus of the trochlear nerve, Deiters' nucleus, and spinal ganglia. (3 photomicrographs.) C. J. C. B.

Progressive facial and crossed hemiatrophy complicated by transient hypoglycæmia. G. Previtali and H. Jacobziner (Amer. J. Dis. Child., 1940, **60**, 116—129).—A case of facial and crossed hemiatrophy complicated by hypoglycæmia is reported. An attack of measles is believed to have been the inciting factor. C. J. C. B.

Reflex inhibition of muscular contraction as clinical phenomenon. M. N. Walsh (Proc. Staff Mayo Clin., 1940, **15**, 454—457).—Report of 2 cases. H. H. K.

Abdominal rigidity. D. H. Wrork (Proc. Staff Mayo Clin., 1940, **15**, 393—398).—Abdominal rigidity when present is uniform throughout the abdomen. H. H. K.

Can migraine in women be cured by inducing menopause? W. C. Alvarez (Proc. Staff Mayo Clin., 1940, **15**, 380—382).—Only a small no. of women were cured after induced menopause by oophorectomy or complete hysterectomy, partial hysterectomy, Roentgen or Ra irradiation. H. H. K.

Autonomic responses to electrical stimulation of lower brain stem. S. C. Wang and S. W. Ranson (J. comp. Neurol., 1939, **71**, 437—455).—Vasopressor responses were elicited in cats by electrical stimulation of the tegmentum and the periventricular grey matter at the level of the pons. More marked responses were obtained from the lateral reticular formation and the adjacent floor of the 4th ventricle. Mild depressor reactions were produced by stimulation in the ventrolateral portion of the tegmentum and from the medial reticular formation. Stimulation of the lateral reticular formation caused large falls in blood pressure. Contraction of the bladder was elicited from the periventricular grey matter and points in the tegmentum of the pons, and from a restricted area in the ventrolateral part of the lateral reticular formation. Marked pupillary responses came from the lateral tegmentum of the pons and lateral reticular formation. W. M. H.

Connexions of inferior colliculus and of dorsal nucleus of lateral lemniscus. H. H. Wollard and J. A. Harpman (J. Anat., 1940, **74**, 441—458).—Experimental lesions (guinea-pigs and cats) were followed by a modified Marchi treatment, and the afferent and efferent connexions of inferior colliculus and dorsal nucleus of lateral lemniscus studied. Full details are given of the anatomical findings. The midbrain auditory nuclei are almost wholly sensory centres, and concerned with very few reflex activities; these sensory impulses may be controlled by fibres from the temporal part of the cortex. E. E. H.

Effects of lesions of medial vestibular nucleus. A. Ferraro, B. L. Pacella, and S. E. Barrera (J. comp. Neurol., 1940, **73**, 7—36).—Injury of the medial vestibular nucleus (macaque monkeys) produces ocular, postural, and kinetic abnormalities and abnormalities of reflexes and tone which resemble a peripheral vestibular lesion on the same side. The symptoms, however, are of greater intensity and longer duration than those observed following a peripheral lesion. Lesions of the medial vestibular nucleus produce the following degenerations of fibres (Marchi preps.): (1) descending fibres in both posterior longitudinal bundles and in the homolateral vestibulo-spinal pathway to the anterior and antero-lateral funiculi respectively in the spinal cord, (2)

ascending fibres in both posterior longitudinal bundles to the motor ocular nuclei, (3) direct fibres to both 6th nuclei, (4) fibres to opposite vestibular complex, (5) a few fibres to homolateral reticular formation, opposite lateral fillet, and homolateral nucleus of vagus. No fibres can be traced to red nucleus, subthalamus, or thalamus. Since many fibres pass through the medial vestibular nucleus from the other vestibular nuclei it is impossible to state that all the degenerated fibres originate in the former. J. D. B.

Descending pathways from hypothalamus to medulla and spinal cord. Blood pressure and bladder responses. S. C. Wang and S. W. Ranson (J. comp. Neurol., 1939, **71**, 457—472).—The hypothalamic efferent pressor pathway in cats occupies a large area of the lateral reticular formation; limited to its ventrolateral portion are fibres for bladder responses. Both bladder and pressor impulses descend in the ventrolateral column of the spinal cord with partial decussation in the brain stem. Location of bladder impulses in the dorsolateral column of the cord is not wholly excluded. W. M. H.

The hypothalamus. F. Kennedy (J. Amer. Med. Assoc., 1940, **114**, 2092—2095).—A review with clinical illustrations. C. A. K.

Hypothalamic lesions and pneumonia in cats. E. W. Haertig and J. H. Masserman (J. Neurophysiol., 1940, **3**, 293—299).—Bilaterally symmetrical lesions were placed in the rostral, middle, and caudal regions of the hypothalamus. Animals with rostral lesions retained the ability to prevent an abnormal fall in body temp. With middle lesions there was marked poikilothermia and many animals succumbed to bilateral bronchopneumonia. With caudal lesions there were occasional disturbances of temp. regulation and a few animals died of pneumonia. S. Cr.

Progression movements elicited by subthalamic stimulation. W. H. Waller (J. Neurophysiol., 1940, **3**, 300—307).—In cats under nembutal, alternating movements of the legs were elicited by 60-cycle a.c. stimulation of the subthalamus in the region dorsal to the mammillary body, indicating that this region contains a sp. centre which directs the order of movement of the legs in locomotion. S. Cr.

Effects of heating hypothalamus of dogs by diathermy. A. Hemingway, T. Rasmussen, H. Wikoff, and A. T. Rasmussen (J. Neurophysiol., 1940, **3**, 329—338).—Electrodes were fixed permanently into the anterior or posterior hypothalamus of dogs and after complete recovery the brain was heated locally by a diathermy current. Heating the anterior hypothalamus caused inhibition of shivering and vasodilation. Heating the posterior region produced sleep and a slight decrease of shivering. In neither case was panting induced. The results prove the existence of centres that are activated by local brain temp. changes. S. Cr.

Thalamic degeneration induced by temporal lesions in cat. W. H. Waller (J. Anat., 1940, **74**, 528—536).—The medial geniculate bodies were examined for cell reaction following lesions of the temporal cortex. The auditory radiation ends in a cortical area including the middle ectosylvian gyrus and dorsal part of the sylvian and anterior ectosylvian gyri, extending ventrally to the upper tip of the sylvian sulcus. The rostral tip of the medial geniculate body connects to the rostral part of this auditory area in the upper end of the anterior ectosylvian gyrus. The central and ventromedial parts of the geniculate body connect to the lower part of the acoustic area in the sylvian gyri. E. E. H.

Dorsomedial thalamic nucleus. A. E. Walker (J. comp. Neurol., 1940, **73**, 87—115).—An account of the connexions of this thalamic nucleus based on experiments on immature macaque monkeys which lived at least 6 weeks after the experiment. The resulting degeneration show that the nucleus projects to the greater part of the prefrontal cortex and the lateral and inferior surfaces of the frontal lobe. This projection presents an anatomical basis for complex integrations at both thalamic and cortical levels. This nucleus may serve as an integrating centre for somatic sensory impulses, received from the lateral and ventral nuclei of the thalamus, and visceral stimuli, relayed from the mesencephalon and hypothalamus, presenting them to the cortex of the prefrontal region in a more complex form. It is doubtful whether bilateral damage to the dorsomedial nuclei in man is alone responsible for the dementia which has been found in such lesions; other areas of encephalomalacia, and involvement of structures other than thalamus, have always been present. J. D. B.

Thalamic connexions of frontal cortex of cat. W. H. Waller (J. comp. Neurol., 1940, **73**, 117—138).—Report of results of 25 experiments on 19 cats. The medial thalamic nucleus degenerates after lesions of the gyrus proreus. Of the parts of the ventral thalamus, the arcuate is connected to the cortex about the lower end of the coronal sulcus, the ventrolateral to the cortex about the upper part of the coronal sulcus and the lateral part of the postcrucial gyrus, the ventral anterior to the motor area in the lateral part of the precrucial gyrus and in the crucial sulcus, the ventromedial to the cortex immediately lateral to the precrucial sulcus. J. D. B.

Cold sensation by radiation. J. D. Hardy and T. W. Oppel (Physical Rev., 1938, [ii], **53**, 920).—The end organs sensitive to cold in human skin were investigated by exposure to "cold" radiation from solid CO_2. The individual sensitivities of the foreheads of 10 subjects were approx. the same. In the upper part of the body the no. of cold end organs per unit area is greater than the no. of heat endings; the threshold of thermal excitation for a cold end organ is a fall in skin temp. of 0·004° per sec.; cold radiation produces twice the change in skin temp., cal. per cal., as does heat radiation; temp. sensation does not depend on vascular changes in the skin; heat and cold sensation are not mediated by the same end organ. L. S. T.

Measurement of effect of morphine, codeine, and other opiates on pain threshold and analysis of their relation to pain experience. H. G.

Wolff, J. D. Hardy, and H. Goodell (J. clin. Invest., 1940, **19**, 659—680).—Quant. measurements of the pain threshold were made by irradiating 3·5 sq. cm. of skin surface for 3 sec. The intensity of radiation which just evoked pain is the "pain threshold." The threshold-raising action of various opium derivatives was ascertained in terms of the normal threshold. The min. effective dose of morphine sulphate was 0·5 mg. The "saturation quantity," or the smallest amount with which highest threshold-raising effect was attained, was 30 mg. The "saturation level," or the highest threshold-raising effect of which the drug was capable, was 100% above the control threshold. The max. threshold-raising effect for morphine in 0·5—15-mg. doses was reached at approx. the same time, *i.e.*, 90 min. after administration. The time–action curve of threshold-raising effect for morphine revealed that elimination increased at a const. rate with quantities up to 15 mg.; with larger quantities of the drug, there was acceleration of elimination rate so that duration of effect with 15 or 30 mg. of morphine differed but slightly. Details are given for other opium derivatives. The threshold-raising action of opium derivatives, as well as other observable effects, was reduced or obliterated by pain. A uniform pain stimulus had a greater neutralising effect on the threshold-raising action of these agents when the pain occurred just before or during the first 90 min. after administration of the opiate. Thereafter, pain had less effect on the threshold-raising action. In other words, if pain preceded or occurred early in the course of the action of the opiate, it reduced or neutralised the threshold-raising effect of these agents. This antagonism between pain and the threshold-raising action of opiates was simulated by the administration of a sympathomimetic agent (adrenaline) before the opiate was administered. The therapeutic effectiveness of opiates is dependent mainly on 3 properties: (1) threshold-raising action, (2) dissociation of pain perception from the usual reaction to pain, and (3) induction of lethargy and sleep. C. J. C. B.

Uniformity of pain threshold in man. G. A. Schumacher, H. Goodell, J. D. Hardy, and H. G. Wolff (Science, 1940, **92**, 110—112).—The apparatus was that used by Hardy *et al.* (A., 1940, III, 716), in which the light from a 1000-w. lamp is focussed on to the blackened forehead of the subject for 3-sec. intervals, the intensity of heat being measured with a radiometer. The pain threshold in 150 persons of different age and both sexes was $0{\cdot}206 \pm 0{\cdot}03$ g.-cal. per sec. per sq. cm., and the standard deviation $\pm 1\%$, the same as observed for individual subjects. Pain threshold could not be correlated with the subject's estimates of sensitiveness to pain, and is independent of sex; it is uniform throughout 24 hr. and unaffected by feelings of lethargy, tension, and over-irritability, or lack of sleep for a 24-hr. period. Individual reactions to pain are not the result of ndividual variations in the pain threshold. E. R. S.

Neurohistological basis of cutaneous pain. H. H. Woollard, G. Weddell, and J. A. Harpman (J. Anat., 1940, **74**, 413—440).—Experiments were carried out on 6 men, using as the stimulus fine needles inserted at right angles to the surface. Pain, as well as pressure, warmth, cold, and touch, is represented in the skin in punctate form. All types of cutaneous pain can be aroused from the deeper layers of epidermis and superficial layers of dermis; the sensation is mediated through fine myelinated and non-myelinated nerve fibres with free endings. The adventitia of blood vessels has a similar innervation. The nerve apparatus subserving pain is alone involved in the production of hyperalgesia and of nocifensor reactions. (B.) E. E. H.

Summation and chemical transmission at endings of autonomic skin nerves. K. Motokawa (Japan. J. Med. Sci., III, 1940, **6**, 215—243).—The electrical responses to indirect stimulation of the frog's nerve–skin prep. with max. double induction shocks show an almost linear increase of % summation with the increase of the interval up to some sec. Atropinisation of the skin decreases the responses to single shocks progressively with the increase of the concn. while the % summation increases steeply (max. at 0·2—0·4 sec. interval). Neither direct stimulation after atropine nor indirect stimulation under narcosis gives this result whilst fatigue by indirect faradisation does. Hence atropine and fatigue transform the nerve endings into a relatively iterative system the % summation of which is highest when the single shock response is smallest. This relationship (for a fixed optimum shock interval) can be expressed by the equation of a hyperbola. The possible release of a chemical transmitter com bining with a hypothetical substance of the effector, and simultaneously decaying at a certain rate, would lead to an equiv. formula. Acetylcholine, in concns. of 10^{-6}—10^{-8}, produces great transitory electrical changes of the skin. Subsequent indirect single shocks evoke large action currents of tetanic type (in shape). High concns. cause inhibition. The acetylcholine effects are abolished by atropine, but not potentiated by eserine, possibly owing to low concn. of esterase (slowness of skin action currents). Some other drugs acting specifically on nerve endings fail to give the effects of acetylcholine which, therefore, is supposed to be the transmitter. H. Ro.

Acid-soluble phosphorus compounds and lactic acid in brain. W. E. Stone (J. Biol. Chem., 1940, **135**, 43—50).—Inorg. PO_4''' and P_2O_7'''' fractions are pptd. from trichloroacetic acid extracts of cat brain by addition of excess of $Ca(OH)_2$; average vals. of 12·0 and 11·6 mg. per 100 g. (as P) respectively are found. Phosphocreatine is determined in the alkaline filtrate by the method of Fiske and Subbarow, and the "hexose phosphate" is obtained by subtraction of the former from the total P of the filtrate. Average vals. for normal mouse brain are (mg. P per 100 g.): inorg. P 16·9, phosphocreatine 10·1, adenyl pyrophosphate 17·2, and "hexose phosphate" 22·5. Barbiturate anæsthesia increases phosphocreatine, and decreases inorg. P and lactic acid. Inorg. P and lactic acid show marked increases at the expense of the other acid-sol. compounds following decapitation. P. G. M.

Meningioma. N. C. Foot (Arch. Path., 1940, **30**, 198—211).—A review. (9 photomicrographs.) C. J. C. B.

Histologic sequences in meningioma; nature of hyperostosis cranii. O. T. Bailey (Arch. Path., 1940, **30**, 42—69). C. J. C. B.

Convulsions of insulin hypoglycæmia in relation to water balance. W. C. Corwin (Proc. Staff Mayo Clin., 1939, **14**, 515—518).—Withdrawal of water for 24 hr.—8 days or hydration, with retention of water, amounting to 10% of the body-wt., produced for periods up to 21 days by excessive administration of NaCl, did not influence the onset of convulsions following administration of insulin in non-diabetic dogs. H. H. K.

Intravenous paraldehyde for convulsions. I. S. Wechsler (J. Amer. Med. Assoc., 1940, **114**, 2198—2199).—Intravenous paraldehyde is suggested for the treatment of various types of convulsions, especially status epilepticus. C. A. K.

Focal epileptogenic lesions of birth and infancy; report of 8 cases. W. Penfield and H. M. Keith (Amer. J. Dis. Child., 1940, **59**, 718—738).—Focal microgyria, meningocerebral cicatrix, and the cerebral cicatrix of arterial occlusion are apt to produce seizures. Subdural hematoma of itself does not cause epileptic seizures. It may often be associated with other lesions and may be partly responsible for the associated intracerebral lesion which actually produces the epilepsy. C. J. C. B.

Integration of locomotor behaviour patterns of hagfish. B. Campbell (J. Neurophysiol., 1940, **3**, 323—328).—The Californian hagfish was subjected to various cord operations to illustrate the nature of the locomotor behaviour patterns. It was possible to gain information on the integration of movement in these animals. S. Cr.

Rôle of neocortex in regulating postural reactions of opossum (*Didelphys virginiana*). R. B. Bromiley and C. McC. Brooks (J. Neurophysiol., 1940, **3**, 339—346).—The neocortex of the opossum was explored electrically and a series of ablations were carried out. Various areas were found which were related to the muscular movements, postural adjustment, and visual responses. The cortical control of posture is less highly developed than in the higher mammals. S. Cr.

Chemical constitution and anæsthetic potency in relation to cortical potentials. H. K. Beecher (J. Neurophysiol., 1940, **3**, 347—352).—The cortical electric response to anæsthesia from 11 alcohols was studied in cats to relate the effects of an increase in C atoms in the alcohols and an increase in potency to the total frequency per sec. of cortical waves. The frequency becomes progressively slower with increasing mol. wt. of the alcohols and is due to an increase in potency. S. Cr.

Cytoarchitectural study of prefrontal area of *Macacus*. A. E. Walker (J. comp. Neurol., 1940, **73**, 59—86).—The cortex of the prefrontal region is distinguished from that of the motor and premotor areas by the presence of a well-developed inner granular layer. In general, in passing anteriorly, the granular cortex becomes larger and more prominent and the cortex thins. Posteriorly the 3rd and 5th layers contain large pyramidal cells, whilst anteriorly the cells of this layer are much smaller, Details are given for areas 8, 9, 10, 11, 12, 13, 14, 24, 25, 45, and 46. A survey is made of the literature on the functions of the prefrontal cortex. J. D. B.

Production of randomness as a suggested measure of intelligence. R. E. D. Clark (Nature, 1940, **146**, 369).—It may be supposed that failure to recognise a relationship between a no. spoken and one given a sec. or so previously will be negatively correlated with intelligence. This is strongly suggested by trial, in which 9 boys each produced 2 sets of 100 nos.; the average lengths of the "runs" (L_1 and L_2) were worked out for each set (Kermack and McKendrick, Proc. Roy. Soc. Edin., 1937, **57**, 228). Using the rank order method, the coeff. of correlation between mental ratio and L_1 was +0·77 and for L_2 +0·40. The correlation between L_1 and L_2 was +0·63. E. R. S.

Vascular disorders of peripheral nerves. J. L. Fetterman and D. K. Spitler (J. Amer. Med. Assoc., 1940, **114**, 2275—2279).—Peripheral nerve lesions in various types of vascular disease are described. C. A. K.

Capillary bed of locus coeruleus. K. H. Finlay and S. Cobb (J. comp. Neurol., 1940, **73**, 45—58).—The blood supply of the locus coeruleus is rich, the actual density of the capillary bed being about 1250 mm. of capillary length per cu.mm. of tissue. This is greater than that of other nuclei of the central nervous system with the exception of the supraoptic nucleus, which is about twice as great, and the periventricular nucleus which is of similar density. In view of the pigment contained in the cells and their rich capillary supply the locus coeruleus may have a special but undetermined function. Its rich blood supply and the pigmentation and characters of its cells differentiate this nucleus from the mesencephalic nucleus of the trigeminal nerve, with which it has been associated by numerous workers. J. D. B.

Influence of emotional factors on physiological and pathological processes. F. Fremont-Smith (Bull. N.Y. Acad. Med., 1939, **15**, 560—569).

Nutrition as factor in development of constitutional barriers to involvement of the nervous system of certain viruses. A. B. Sabin and C. E. Duffy (Science, 1940, **91**, 552—554).—From 100% susceptibility mice develop 100% resistance to vesicular stomatitis virus between the 14th and 35th days of life, when weaned at 14 and 28 days if the diets are complete. When the maternal diet or rat diet is deficient in vitamin-*E* or -*B* complex, resistance is delayed or inhibited. Once the resistance is formed it cannot be broken down by vitamin deficiency. E. R. S.

Vitamin-B_1 and delirium tremens. H. E. Kiene, R. J. Streitwieser, and H. Miller (J. Amer. Med. Assoc., 1940, **114**, 2191—2194).—5 cases of delirium tremens were given 950 c.c. of whisky daily + 50 mg. of thiamin intravenously daily. The

symptoms disappeared within 36 hr., about twice as quickly as in 5 control cases who were given 2 mg. of thiamin daily in the diet and no alcohol. This suggests that delirium tremens is due to vitamin-B_1 deficiency. C. A. K.

Disorders of articulate speech. L. Stein (Brit. Med. J., 1940, I, 902—905).—A review. C. A. K.

Negative pressure in epidural space. L. M. Eaton (Proc. Staff Mayo Clin., 1939, **14**, 566—567).—Negative pressure in the epidural space is an artefact. H. H. K.

Calcium and phosphorus in cerebrospinal fluid in diabetes insipidus. H. Blotner (Amer. J. med. Sci., 1940, **200**, 235—239).—The concns. of Ca, P, Cl′, and protein were studied in the c.s.f. and serum in 10 patients with diabetes insipidus. The average concn. of c.s.f.-Ca was greater than that in serum (1·51 and 1·27 mM. per l., respectively). A series of control patients showed no such difference. Analyses for inorg. PO_4''', Cl′, and protein showed no significant differences. C. J. C. B.

Neural maturation as exemplified in achievement of bladder control. M. B. McGraw (J. Pediat., 1940, **16**, 580—590).—One member of 2 pairs of identical twins, after the first month of life, was placed on the chamber at hourly intervals during 7 hr. of the day. Their twins were not allowed on the chamber until they were 14—24 months of age, respectively, when they were given the same training. In both cases the achievement of the latter boys approximated to that of their brothers, even from the day they were first put on the pot. C. J. C. B.

Distribution of disturbances of sweat secretion after extirpation of certain sympathetic cervical ganglia in man. L. Guttmann (J. Anat., 1940, **74**, 537—549).—Extirpation of sympathetic ganglia produces a loss of heat-regulating sweat secretion in a limited skin area; this is accompanied by compensatory secretory hyperactivity of adjacent ipsilateral and contralateral zones. Details are given of the distribution of sweat-secretor fibres. E. E. H.

(x) SENSE ORGANS.

Ocular movements from occipital lobe in monkey. A. E. Walker and T. A. Weaver (J. Neurophysiol., 1940, **3**, 353—357).—Electrical stimulation of the occipital cortex in monkeys caused contralateral conjugate deviation of the eyes. When the site of stimulation was above the calcarine fissure the eyes moved laterally and downwards, when below the eyes moved laterally and upwards. W. T. A.

Convergence deficiency. I. Mann (Brit. J. Ophthal., 1940, **24**, 373—390).—A review of the symptoms, prognosis, and treatment of the group of exophorics who are unable to perform convergence as a voluntary action. "Convergence exercises" are described. W. T. A.

Isolated congenital absence of the inferior rectus muscle. V. G. Casten (Arch. Ophthal., N.Y., 1940, **24**, 55—61).—Two cases are described. This abnormality cannot be distinguished clinically from congenital paralysis of the muscle. It is treated by advancing the external rectus. W. T. A.

Reimplantation and transplantation of eyes in anuran larvæ and *Fundulus heteroclitus*. L. S. Stone (Proc. Soc. Exp. Biol. Med., 1940, **44**, 639—641).—Enucleated eyes reimplanted in the orbit soon regained their circulation. In *Fundulus* the retina degenerated, in anuran larvæ there was little degeneration. The optic nerve did not regenerate. W. T. A.

Eye studies following lumbar puncture. L. S. Powell and H. S. Smith (Amer. J. Ophthal., 1940, **23**, 792—795).—Withdrawal of 5—10 c.c. of c.s.f. from 56 mental patients had no effect on visual acuity, intraocular tension, or blood pressure. In 16 cases hyperæmia or slight œdema of the optic disc was noted; in 9 cases this was accompanied by nausea and headache. W. T. A.

Pigmentation of conjunctiva and its relation to nutrition. C. B. Dhurandhar and A. K. Boman-Behram (Indian J. Med. Res., 1940, **27**, 735—741).—Out of 189 boys in an industrial school in Bombay, 169 had patchy and linear pigmentation of the conjunctiva; their diet was poor in protein and fats. 137 had defective vision in one or both eyes and of these 118 had pigment in the conjunctiva. The vision of 52 boys did not return to normal after full correction of the refractive error with glasses. 10% of boys without pigmentation showed diminished light-sensitivity, while 72% with pigment showed it. 80% of boys with pigmented conjunctiva and defective vision persisting after correction of refractive index showed impaired light-sensitivity. H. B. C.

Corneal involvement in congenital ichthyosis (keratodermia). D. Vail (Arch. Ophthal., N.Y., 1940, **24**, 215—220).—In one case there were multiple corneal nodules and intense photophobia which was relieved by excision of the nodules. W. T. A.

Antagonism between adrenergic drugs and atropine in isolated iris dilator. P. Heath and E. Sachs (Arch. Ophthal., N.Y., 1940, **24**, 142—148).—Isolated radial strips of the iris dilator of rabbits were contracted by adrenaline. Atropine caused relaxation of the contraction. W. T. A.

Barium in the mammalian retina. G. H. Scott and B. Canaga, jun. (Proc. Soc. Exp. Biol. Med., 1940, **44**, 555—556).—Ba was demonstrated spectrographically in retinas of various mammals. It could not be found in other tissues. W. T. A.

Use of Purkinje figures as test for separated retina and other intraocular pathology. C. B. Walker (Amer. J. Ophthal., 1940, **23**, 803—804).—Purkinje images cannot be seen in any part of an eye with a detached retina, perhaps because the resulting œdema of the retina increases the distance between blood vessels and visual cells. W. T. A.

Amaurotic idiocy and related conditions. Pathology of retina in infantile amaurotic idiocy. A. Hagedoorn (Amer. J. Ophthal., 1940, **23**, 735—759).—Amaurotic idiocy is related to the lipoidoses (Niemann–Pick disease, Gaucher's disease, etc.) in

that both are characterised by a primary lipoid degeneration of nerve and mesodermal cells, in amaurotic idiocy principally the nerve cells, in the lipoidoses principally the mesodermal cells. The retinal changes are similar in amaurotic idiocy and Niemann–Pick disease. In both Tay's sign may be present. The basic feature is lipoid degeneration of the ganglion cells and glial cells. The rods, cones, and bipolar cells are not primarily affected. The mesodermal cells of the eye are not affected at all.
W. T. A.

Retinitis pigmentosa. R. C. Moehlig and R. H. Pino (Arch. Ophthal., N.Y., 1940, **23**, 1257—1273).—A review of 21 cases of retinitis pigmentosa. A tendency to high arched palate, tallness, dark colouring, etc. was found in most of the patients and on this basis it is suggested that the pituitary must be involved in the disease. K. T.

Gyrate atrophy of retina and choroid following retinitis pigmentation. W. T. Davis and E. Sheppard (Arch. Ophthal., N.Y., 1940, **23**, 1252—1256).—Two cases of retinitis pigmentosa in two brothers, children of first cousins, were followed for 11 years. In both cases the retinal lesion proceeded to gyrate atrophy of both retina and choroid and it is suggested that this is likely to become a complete choroideremia with time. Another brother was affected but not examined and a paternal great uncle went blind. The question of whether the choroid degeneration is secondary to the retinal lesion is discussed. K. T.

Fundamental physiologic principles in study of the visual field. H. L. Bair (Arch. Ophthal., N.Y., 1940, **24**, 10—20).—An improved method of testing the visual field depends on the use of larger test objects at a lower level of light adaptation. This largely annuls the disturbing effect of uncorr. ametropia. W. T. A.

Determination and significance of photopic retinal visibility curve. E. Ludvigh (Arch. Ophthal., N.Y., 1940, **24**, 168—181).—The photopic visibility curve is transformed to a photopic retinal visibility curve by applying corrections for the absorption and reflexion of light by the eye media. The resulting curve is very symmetrical and does not resemble the absorption spectrum of any photosensitive substance found in the eye. The data of the curve are well represented by a simple probability function; the symmetry and smoothness of the curve suggest the operation either of a single process or of a large no. of processes rather than of 3 or 4 processes. Possible explanations of the shape of the curve are discussed. If the process is photochemical the curve resembles a single broadened absorption line. The initial process may be photo-electric, or the shape of the curve may not be dependent on the initial visual process but on some subsequent stage in perception.
W. T. A.

Colour vision and chromaticity scales. W. D. Wright (Nature, 1940, **146**, 155—158).—Recent advances in knowledge of colour vision are due to the technique of binocular matching after adaptation and the method of varying the angle of a pencil of light incident on the retina; recording impulses in single nerve fibres has also great promise. The specification of colours in quant. terms depends on the fact that any colour can be matched by a mixture of three chosen standard colours; such standards date from those of the Commission Internationale de l'Éclairage (C.I.E.) in 1931. In this system the standard colours are represented as co-ordinates and the intensities as the vals. of these. The actual measurement can be based on three filter systems used with photo-cells, or a recording spectro-photometer, or visual colour-matching. The second is the most promising but extremely costly. The C.I.E. scale itself is open to objections in regard to the distribution of equal colour-differences on its scales, but modification would entail unwarrantable inconvenience in industry. K. J. W. C.

Chimpanzee colour vision. (1) Hue discrimination; (2) colour mixture; (3) special limits. W. F. Grether (J. Comp. Psychol., 1940, **29**, 167—192).—Chimpanzee vision has been investigated; their hue discrimination is similar to that previously found for rhesus monkeys (A., 1939, III, 1043). The extent of the spectrum for chimpanzees and rhesus monkeys was found to be at least as extensive as that of man. K. J. W. C.

Vision and colour vision. F. W. Edridge-Green (Chem. and Ind., 1940, 567—571).
K. J. W. C.

Characteristics of protanomalous vision. W. M. McKeon and W. D. Wright (Proc. Physical Soc., 1940, **52**, 464—479; cf. Nelson, *ibid.*, 1938, **50**, 661).—Measurements are reported and classified for the luminosity curve, mixture curves, trichromatic coeffs. through the spectrum, and hue discrimination and saturation discrimination curves of 11 protanomalous observers selected from about 2000 persons. Hue discrimination results yield curves ranging from that for the normal trichromat to that for the protanopic type of dichromat; the luminosity data vary little for the different observers, a result difficult to reconcile with the theory of protanomalous defect. N. M. B.

Subjective phenomena of vision in polarised light. H. H. Neuberger (J. Opt. Soc. Amer., 1940, **30**, 258).—If a uniform field of partly polarised light such as the sky is viewed through Savart's double plate of quartz with an analyser between the plates and the eye objective interference bands are seen; similar bands are also visible without the analyser, but their central portion is distorted in the region where Haidinger's brushes appear. The effect is marked with blue light and absent with extreme red light. It is suggested that different portions of the light passing through the eye are partly polarised in different planes. K. J. W. C.

Nerve messages in the fibres of the visual pathway. H. K. Hartline (J. Opt. Soc. Amer., 1940, **30**, 239—247).—A summary of the author's electrophysiological studies on the eyes of *Limulus* and the frog. In *Limulus* the optic nerve impulses show reduction in frequency during exposure to light (bright adaptation) and increase after darkness (dark adaptation). Different visual sense cells show maxi-

mal sensitivity at slightly different spectral points, indicating primitive colour vision. In the frog different types of nerve fibre are found, some responding to the onset and others to the cessation of light stimulation, some adapting rapidly and others slowly; these effects probably originate in the ganglion layers of the retina. Summation of light stimuli in neighbouring regions can also be shown by exploring the retina of the frog with a spot of light; the degree of such summation and overlap indicates the need for considering patterns of activity in the nervous system. K. J. W. C.

Electrical activity of lateral geniculate of cats following optic nerve stimuli. G. H. Bishop and J. S. O'Leary (J. Neurophysiol., 1940, **3**, 308—322).—The responses of the lateral geniculate body to electrical stimulation of the opposite optic nerve were recorded by the oscillograph. Fibres from the optic tract spread in a sheet over most of the area bounded by geniculate bodies, pretectum, and superior colliculus. There are 4 groups of fibres in the optic nerve; large fibres with fast conduction and low threshold pass to synapses in the anterior part of the area and activate mainly the geniculate body and cortex. Smaller fibres with slow conduction pass to synapses in the posterior part of the area and activate mainly the thalamic nuclei and superior colliculus. The homolateral response of the optic cortex varies from 15 to 70% of the contralateral. There is no facilitation at the geniculate level on simultaneous or successive stimulation of the two optic nerves, and little or none at the cortical level. W. T. A.

Retrograde degeneration in optic nerves and tracts. Experimental study of changes in axis cylinders. P. J. Leinfelder (Amer. J. Ophthal., 1940, **23**, 796—802).—The optic nerves or tracts were cut in cats and monkeys. Retrograde degeneration was more extensive after section of tracts than after section of nerves. It differed from primary degeneration in that there was no early change in the axis cylinders and finally only incomplete degeneration. W. T. A.

Relation of drusen of the optic nerve to tuberous sclerosis. A. B. Reese (Arch. Ophthal., N.Y., 1940, **24**, 187—203).—"Drusen" are small nodules of hyaline and calcareous material on the optic disc, resembling tapioca grains ophthalmoscopically. Similar histological appearances are found in the nodules of tuberous sclerosis, and the two conditions may co-exist. Cases are described and it is suggested that both conditions may be manifestations of the same disease. W. T. A.

Waltzing guinea-pigs with particular reference to ocular movements and righting reflexes. D. G. Cogan (Arch. Ophthal., N.Y., 1940, **24**, 78—82).—Waltzing guinea-pigs do not show nystagmus after rotation, do not adopt the normal characteristic posture during rotation, and do not right themselves when falling with eyes bandaged. There is absence of labyrinthine control of eye and head movements: righting reflexes are mediated only by visual and tactile stimuli. W. T. A.

Structure, development, and electrical reactions of the internal ear of the shaker-1 mouse (*Mus musculus*). H. Grüneberg, C. S. Hallpike, and A. Ledoux (Proc. Roy. Soc., 1940, **B**, **129**, 154—173).—The shaker-1 mouse shows hereditary shaking of the head and complete deafness, neither of which symptoms appears until after birth. The condition is fully recessive. In these animals the cochlea differentiates normally to the adult stage at about 12 days after birth and at this age hearing is normal. Degeneration of the nuclei of the hair cells of Corti's organ then develops and progresses until the organ is reduced to a lump of undifferentiated cells. The basal half turn of the cochlea is usually affected first. There is a parallel degeneration (loss of cytoplasm) of the stria vascularis and a degeneration of the spiral ganglion which follows later and is probably secondary to that of Corti's organ. There are no recognisable changes in the vestibular apparatus and no changes in the blood supply to the inner ear. Hearing reactions are absent from 38 days of age and the max. voltage of cochlear response falls off with age corresponding with the degeneration of Corti's organ and the stria vascularis. There is a relatively greater reduction in the response to higher frequencies which may be correlated with the accentuation of the degenerative changes in the basal half turn of the cochlea. (Illust.) K. T.

Effect of noises of warfare on the ear. T. S. Littler (Nature, 1940, **146**, 217—219).—Rupture of the tympanic membrane by blast is not serious since this quickly heals and hearing is recovered. Permanent damage may, however, be done to the cochlea by prolonged subjection to sounds of high frequency at high intensities. Also, single blasts, in the case of explosive sounds, may cause permanent degeneration of the hair cells of the basal turn of the cochlea, thereby producing deafness to high frequencies. K. T.

Bilateral acoustic neurofibromas. Clinical and pathological data on hereditary deafness and Recklinghausen's disease. W. J. Gardner and O. Turner (Arch. Neurol. Psychiat., 1940, **44**, 76—99).—A further report is given on the family described earlier (Gardner and Frazier, *ibid.*, 1930, **23**, 266) in which Recklinghausen's disease in the form of bilateral acoustic tumour had been transmitted as a dominant Mendelian character through five generations. 38 members of the family then showed deafness, blindness, and other symptoms and the diagnosis has now been confirmed by autopsy in 4 of these. One additional member in the 6th generation has also become affected. K. T.

Deafness and loss of vestibular function following herpes of scalp. D. B. Kelly (J. Laryng. Otol., 1940, **55**, 286—288).—A case is described in which unilateral deafness and loss of labyrinth function followed herpes of the scalp on the same side. It is suggested that the herpes infection spread centrally from a lesion at the peripheral nerve endings along the sheath of the Vth nerve and infected the VIIIth nerve in the medulla where the two are in close juxtaposition. The infection may then have spread peripherally along the VIIIth nerve and involved both the spiral ganglion in the cochlea and Scarpa's ganglion. K. T.

Mechanism of semicircular canal. Responses of single-fibre preparations to angular accelerations and to rotation at constant speed. O. Löwenstein and A. Sand (Proc. Roy. Soc., 1940, **B**, **129**, 256—275).—Single fibre discharges from the horizontal ampulla of the isolated labyrinth of *Raja clavata* are recorded, and the existence of a spontaneous rhythm of discharge which is increased by ipsilateral and inhibited by contralateral rotation is confirmed. During uniform angular acceleration the frequency of impulses increases or decreases gradually in a linear manner, the rate being proportional to the speed of acceleration. The threshold of the latter is approx. 3° per sec.^{2} During prolonged rotation at const. speed the frequency discharge having reached a max. or min. gradually returns to the spontaneous val. in 20—30 sec. The results are interpreted in terms of the physical properties of the cupula. The spontaneous discharge and its excitation and inhibition provide a basis for interpretation of labyrinthine tone and of reflex responses to rotation in both directions by unilaterally operated animals, and the sensory activity of the semicircular canal, based on the physical properties of the cupula, can account for the time relations of nystagmus and after-nystagmus. J. N. A.

Olfactory neuroepithelium in mammals. M. H. Lams (Bull. Acad. Méd. Belg., 1940, [vi], **5**, 110—135).—A review of researches on the vascularity of olfactory neuroepithelium. H. B. C.

Alcohol taste thresholds and concentrations of solution preferred by rats. C. P. Richter and K. H. Campbell (Science, 1940, **91**, 507—508).—Rats show a preference for certain concns. of some solutions which play an important part in nutrition to water, and prefer water to very dil. solutions of toxic substances. 13 of 17 rats preferred 1·8—6% alcohol to water. E. R. S.

(xi) DUCTLESS GLANDS, EXCLUDING GONADS.

Endocrine structure and Abderhalden's interferometric reaction. W. Pettersson (Klin. Woch., 1939, **18**, 1218—1222). M. K.

Endocrine system and plumage types. II. Effects of thyroxine injections to normal caponised and thyroidectomised caponised birds. III. Relation between thyroid gland and plumage patterns in domestic fowls and ducks. IV. Feminisation of plumage with special reference to henny cocks and eclipse drakes. V. Production of eclipse plumage in mallard by injection of anterior pituitary extract and dehydroandrosterone. J. P. Chu (J. Genet., 1940, **39**, 485—492, 493—501, 503—515, 517—524).—II. Thyroxine (0·1—1 mg. daily) was injected into various types of domestic fowl during the period of feather regeneration following plucking of skin areas. The experimental birds were thyroidectomised capons of the Silver Dorking, Double-Laced Barnevelder, and Ancona breeds, normal capons of Welsummer and Speckled Sussex breeds, and thyroidectomised Sebright Bantams. The amount of barbule formation returns to normal or becomes excessive, there is a loss of fringing, and pointed feathers tend to become shorter and rounder. The feathers assume normal or hyperthyroid coloration in thyroidectomised birds and hyperthyroid coloration in normal or caponised birds. Melanin formation is increased except in Anconas and Speckled Sussex where it is displaced. This may be due to excessive thyroxine dosage indicating a higher sensitivity in the latter breeds. The more rapidly growing feathers and the more rapidly growing parts of the individual feathers are most sensitive to thyroxine stimulation.

III. Thyroidectomy produced an inhibition of moulting and depression of feather growth in various breeds of fowl, duck, and pigeon. The feather changes are described in detail, affecting both colour and structure in duckwings and partridge game bantams but only structure in Barred, White, and Silver-Black Rocks and in pigeons. Thyroid feeding (150—300 mg. of dried thyroid daily for 30—60 days) produced the opposite affects.

IV. The effects of castration on the plumage of henny-feathered dark-grey and duckwing Old-English gamecocks are described. Testosterone injection (10 mg. × 3) in capons of these species produces female feathering and evidence of thyroid depression. In capons from male-feathered cocks of normal breeds higher doses (50 mg. × 3) of testosterone have to be injected to produce thyroid-deficient plumage and these doses produce no evidence of feminisation. Barred female feathers were produced in capons of several breeds of fowl and in the Rouen drake by œstrogen injection, showing that the bars are due to differences in intensity of response rather than of stimulus. Castration of the mallard drake before April inhibited the appearance of eclipse plumage in the same and subsequent years even if the capons were plucked at the normal time of eclipse appearance. Testosterone (10 mg. per day) did not affect the plumage of the mallard capon but œstrone (implantation of two 50-mg. tablets) caused feminisation intermediate between that of the nuptial and eclipse female. The male mallard is therefore not seasonally henny-feathered nor is the appearance of eclipse dependent on androgenic stimulation.

V. Large doses of sheep pituitary extract produce premature eclipse plumage in mallard drakes with associated testicular hypertrophy. 5 mg. of *trans*-dehydroandrosterone daily caused the growing feathers of young male or castrated mallards to assume an eclipse type. P. C. W.

Thyrotoxicosis. W. A. Reilly (Amer. J. Dis. Child., 1940, **60**, 79—87).—A lecture. C. J. C. B.

Basal metabolism in thyrotoxicosis. L. Martin (Brit. Med. J., 1940, I, 927—928).—The clinical val. of the basal metabolic rate is discussed with stress on certain limitations. C. A. K.

Thyroid medication in childhood. L. Wilkins (J. Amer. Med. Assoc., 1940, **114**, 2382—2387).—A review with case records. C. A. K.

Quantitative study of height of thyroid acinar cells in normal and abnormal thyroids. M. S.

ABEL (Amer. J. med. Sci., 1940, **200**, 220—228).—Single and multiple sections of 116 normal and pathological thyroid glands were examined microscopically and blocks of 100 acinar cells measured by means of a micrometer scale in the eyepiece. There was almost perfect agreement of means of cell heights in different sections of 5 normal glands. Means from 40 normal glands varied within a narrow range. Of 25 toxic diffuse goitres examined, 22 had mean cell heights outside the upper limit of normal. 51 nodular goitres were examined and divided into toxic and non-toxic groups. In general, there was an overlapping of the mean heights of the 2 groups although those of the former tended to be greater. Of differential importance, however, was the fact that 38·5% of the former group had mean heights of 5·8 units or greater, a figure higher than any obtained in the latter group. C. J. C. B.

Creatinuria in hyperthyroidism and vitamin-*C*. H. J. VON PLEHWE (Klin. Woch., 1939, **18**, 1619—1621).—Thyreotoxic creatinuria disappears after administration of ascorbic acid, even after the elimination of ether-sol. "pseudo-creatine" substances. M. K.

Effect of renal insufficiency on response of serum-calcium after administration of parathyroid hormone in rat. A. CHANUTIN and S. LUDEWIG (Amer. J. Physiol., 1940, **129**, 242—244).—Renal insufficiency produced by partial nephrectomy in rats is responsible for a depression in the mobilisation of plasma-Ca after injection of parathyroid extract. M. W. G.

Physiological hypertrophy of parathyroids, its cause and relation to rickets. A. W. HAM, N. LITTNER, T. G. H. DRAKE, E. C. ROBERTSON, and F. F. TISDALL (Amer. J. Path., 1940, **16**, 277—286).—Parathyroid hypertrophy is not necessarily associated with rickets; it occurs only in low-Ca, and not in low-P, rickets. Parathyroid hypertrophy develops when the blood-Ca is low and -P normal; it does not occur when the blood-P is raised and -Ca is normal. Hypocalcæmia, not hyperphosphatæmia, is the primary cause of physiological hypertrophy of the parathyroids. C. J. C. B.

Hyperparathyroidism. F. A. KYSER (Proc. Staff Mayo Clin., 1940, **15**, 179—181).—A review. H. H. K.

Nervous and vascular relations of pineal gland. W. E. LE G. CLARK (J. Anat., 1940, **74**, 471—492).—Observations on the pineal gland of the rhesus monkey and man show that there is no system of blood vessels linking it with epithalamic cells comparable with that described in relation to hypophysis and hypothalamus. The pineal gland has a central vascular core of neuropile with ganglion cells, and from here arises a fasciculus that emerges at the apex as the nervus conarii. This nerve passes into the wall of the straight sinus (monkey) where it ramifies beneath the endothelium; in man it runs to the dura mater of the tentorium cerebelli, and then runs back in the floor of the straight sinus. Nerve fibres from the habenular and posterior commissures enter the pineal through its peduncle, but are probably all merely passing through from one side to the other; some end amongst the ependymal epithelium of the pineal recess. The suprapineal arachnoid body, like a large arachnoid granulation, possibly provides a ball-valve mechanism for controlling the venous return from the great vein of Galen. E. E. H.

Effects of adrenaline on tubal contractions of rabbit in relation to sex hormones. A. M. DAVIDS and M. B. BENDER (Amer. J. Physiol., 1940, **129**, 259—263).—Adrenaline in small amounts injected intravenously in the anœstrus rabbit increases the contractility of the intact oviducts. The tubal response to adrenaline during œstrus or after injection of œstrogens is increased; it is decreased after injection of androgens. Castration produces no change in response. M. W. G.

Cardiazol does not produce adrenaline secretion. J. M. BARMAN (Rev. Soc. argent. Biol., 1939, **15**, 487—489).—In cross-circulation experiments in dogs sensitised to adrenaline by cocaine and atropine, cardiazol in doses sufficient to produce convulsions produced no adrenaline discharge, and basal secretion was not increased. J. T. L.

Ethylene and *cyclo*propane do not produce adrenaline secretion. J. M. BARMAN (Rev. Soc. argent. Biol., 1939, **15**, 490—491).—The donor animal in an adrenal–jugular cross-circulation experiment inhaled mixtures of both gases in O_2 in concns. of 15—75% for as long as 30 min. The receptor dog sensitised to adrenaline by means of atropine and cocaine did not register an adrenaline discharge nor any increase in the basal adrenaline secretion. J. T. L.

Work performance of adrenalectomised rats maintained on high-sodium chloride, low-potassium diet. D. J. INGLE (Amer. J. Physiol., 1940, **129**, 278—282).—Adrenalectomised rats fed a Purina dog chow (NaCl 1·35% K 0·56%) showed losses in body-wt., high mortality rate, and a great deficit in work capacity; rats maintained on an NaCl-rich K-poor diet all survived, gained in body-wt., and performed more work. None of the adrenalectomised rats gave work performances equal to those of intact rats. M. W. G.

Adrenal weight in rats living parabiotically with adrenalectomised partners. R. C. LI and S. Y. P'AN (Chinese J. Physiol., 1940, **15**, 327—334).—The adrenal wt. is increased in the normal partner following adrenalectomy in the other. N. H.

Effect of compounds from adrenal cortex on distribution of electrolytes and atrophy of adrenal and thymus glands of rats. B. B. WELLS and E. C. KENDALL (Proc. Staff Mayo Clin., 1940, **15**, 133—139).—The physiological action of adrenal cortex extracts requires at least 3 different compounds, each with its own distinctive and limited action. The greatest part of the action is produced by the cortin fraction. This does not cause atrophy of adrenal or thymus; it does not raise the serum-Na in the rat above 140 m-equiv. per l. and does not decrease serum-K below 5 m-equiv. per l. It maintains a normal level of blood-urea and permits a normal rate of excretion of K by the kidney. The atrophy of the adrenal and thymus glands is due to corticosterone

and the related compound *A*. Its effect on serum-Na and -K is within the same range as that of the cortin fraction. The quantity of corticosterone required to maintain a normal blood-urea is at least 60 times the amount of the cortin fraction. The maintenance of serum-Na above 140 m-equiv. per l. and of -K at low levels in normal rats is produced by deoxycorticosterone and its acetate. These compounds cause a rapid gain in wt. in normal and adrenalectomised rats. H. H. K.

Progress in treatment of Addison's disease. R. M. Wilder (Proc. Staff Mayo Clin., 1940, **15**, 273—277).—A review. H. H. K.

Chemical nature of hormones of adrenal cortex. H. L. Mason (Proc. Staff Mayo Clin., 1940, **15**, 289—291).—A review. H. H. K.

Influence of extract of adrenal cortex on glycogenesis in fasting rats. R. G. Sprague (Proc. Staff Mayo Clin., 1940, **15**, 291—294).—Adrenal cortex increases liver-glycogen in fasting normal or partially depancreatised rats; muscle-glycogen is not altered. More N is excreted in the urine by fasting normal rats treated with cortical extracts, suggesting that protein may be the material from which the newly formed glycogen is made. H. H. K.

Influence of crystalline compounds of adrenal cortex on gluconeogenesis. B. B. Wells (Proc. Staff Mayo Clin., 1940, **15**, 294—297).—Corticosterone and compound *E* restored the rate of the formation of sugar to normal, but deoxycorticosterone and the amorphous fraction were inadequate although the wt. of deoxycorticosterone used was equal to or double the amount of corticosterone and the amount of the amorphous fraction used was more than twice the equiv. of corticosterone when standardised on an adrenalectomised dog. All the rats which received corticosterone or compound *E* tolerated the fast and treatment with phloridzin as well as non-adrenalectomised normal rats. H. H. K.

Function of adrenal cortex. E. C. Kendall (Proc. Staff Mayo Clin., 1940, **15**, 297—304).—A review. H. H. K.

Influence of corticosterone and compound *E* on somatic growth. B. B. Wells and E. C. Kendall (Proc. Staff Mayo Clin., 1940, **15**, 324—328).—16 young male rats which received 1 mg. of corticosterone daily in the drinking water for 30 days never gained at a rate equal to that of the control groups. The treatment was followed by atrophy of adrenal glands, thymus, and spleen. 1 mg. of compound *E* daily for a period of 10 days produced immediate and marked suppression of growth in both male and female young rats. There was marked atrophy of the adrenals and the thymus glands were practically entirely destroyed in both sexes. H. H. K.

Tolerance of patients with Addison's disease to potassium. T. B. Tooke, jun., M. H. Power, and E. J. Kepler (Proc. Staff Mayo Clin., 1940, **15**, 365—368).—Patients with Addison's disease can tolerate a liberal intake of K when they are treated with deoxycorticosterone acetate. Excessive retention of salt and water occurs readily when the intake of K is restricted and, conversely, a liberal intake of K counteracts such retention. H. H. K.

Decurvon, a pectin-insulin. B. Brahn (Lancet, 1940, **238**, 1078—1080).—Decurvon, a sol. pectin-insulin, has a longer action than ordinary insulin in lowering the blood-sugar in the rabbit and in man. It may be given intravenously. C. A. K.

Insulin and acid-base metabolism. C. Dienst (Klin. Woch., 1939, **18**, 1614—1615). M. K.

Influence of œstrogen on insulin requirement of diabetic. A. R. Spiegelman (Amer. J. med. Sci., 1940, **200**, 228—234).—A detailed account of work already noted (A., 1940, III, 644). The daily insulin requirement did not return to the "pre-œstrogen" level even after œstrogen had been discontinued for 3 months. The type of insulin used had no influence on the results obtained. C. J. C. B.

Assay of insulin content of pancreas in rats receiving anterior pituitary extract. H. Y. Soong (Chinese J. Physiol., 1940, **15**, 335—341).—Injection of a saline extract of ox pituitary into normal and hypophysectomised rats increased the wt. of the pancreas (particularly of the latter) and the insulin content, assayed by the mouse-convulsion method (particularly of the former, in which the no. and size of the islets were also increased). N. H.

Influence of adrenal and thyroid on gluconeogenesis in phloridzin diabetes. B. B. Wells and E. C. Kendall (Proc. Staff Mayo Clin., 1940, **15**, 493—496).—Adrenalectomised–phloridzinised rats did not show the high rate of gluconeogenesis of normal phloridzinised rats. Adrenalectomised–phloridzinised rats treated with adrenal cortex compound *E* had as high a rate of gluconeogenesis as normal phloridzinised rats. Thyroidectomy diminished the amount of glucose and N excreted by normal, phloridzinised rats, but the rate of gluconeogenesis could be restored to normal by the administration of thyroxine. Compound *E* did not restore gluconeogenesis in the adrenalectomised–thyroidectomised rat to that observed in the normal rat after adrenalectomy. The lowest rate for the formation of glucose and the excretion of N was found in phloridzinised rats which were both adrenalectomised and thyroidectomised. The highest rate of gluconeogenesis was found in phloridzinised normal rats treated with thyroxine and compound *E*. The lowest ratio of glucose to N (2·3) was found in the thyroidectomised rats; the highest ratio (4·5) was found in rats that received thyroxine. For all rats with intact thyroid glands with or without adrenal glands the ratio of glucose to N was 3·4—3·7. H. H. K.

Does the hypophysis secrete pancreotrophic hormone? M. Griffiths and F. G. Young (Nature, 1940, **146**, 266—267).—Subcutaneous implantation of 2·15 mg. of stilbœstrol tablets increases the insulin content of the pancreas of rats to over 1 unit per 100 g. body-wt. in one month. When, in addition, injections of crude anterior pituitary extracts are given the insulin content is further increased. The evidence presented does not support the assumption

that the anterior lobe exerts a direct hormonic control over the islets of Langerhans. E. R. S.

Experimental exophthalmos and muscle degeneration induced by thyrotrophic hormone. D. L. Paulson (Proc. Staff Mayo Clin., 1939, **14**, 828—832).—Administration to guinea-pigs of a pituitary extract (1 c.c. or 50 guinea-pig units of antuitrin T) containing a potent thyrotrophic factor caused measurable exophthalmos, retrobulbar œdema, and degeneration of skeletal and cardiac muscles in both non-thyroidectomised and thyroidectomised animals. I, administered as NaI or di-iodotyrosine in daily doses of 100 mg., did not affect either the development of exophthalmos or the muscle changes, although it lessened thyroid hypertrophy and prevented an increase in basal metabolism. H. H. K.

Chromatic behaviour of eel (*Anguilla vulgaris*, L.). H. Waring (Proc. Roy. Soc., 1940, **B**, **128**, 343—353).—Experiments on the effect of hypophysectomy on normal chromatic behaviour and tolerance to pituitary extracts show that the expanding hormone (*B*) is localised in the posterior lobe of the pituitary and the contracting hormone (*W*) in the anterior lobe. *B* accumulates rapidly and is quickly excreted; *W* is built up and excreted slowly. The direct innervation of the melanophores is dominated by the humoral control; it can be demonstrated only in the absence of *B* and does not operate in normal behaviour. F. B. P.

(xii) REPRODUCTION.

Reproductive system of male opossum and its experimental modification. E. B. Chase (J. Morph., 1939, **65**, 215—239).—A description of the male genital tract and of the effects on it of castration and injections of antuitrin-S and prospermin. J. D. B.

Outbreeding and separation of sexes. K. Mather (Nature, 1940, **145**, 484—486).—Gametic differentiation and separation of the sexes, sexual reproduction and separation of the sexes, and distribution of outbreeding mechanisms are discussed. E. R. S.

Effect of fluorine on hatching time and hatching stage in *Rana pipiens*. J. A. Cameron (Ecology, 1940, **21**, 288—292).—F (1 p.p.m.) retards the rate of development and stage at hatching of *R. pipiens*. Higher concns. of F are necessary with pond water than with well or distilled water to produce a retarding effect. L. G. G. W.

Detection of fertility in eggs. A. L. Romanoff (U.S. Egg and Poultry Mag., 1940, **46**, 106—108).—It is demonstrated by means of a radio-frequency circuit that fertile eggs have a higher dielectric const. and a lower conductivity than infertile eggs. H. G. R.

Formation of lactic acid from alanine under anaërobic conditions in eggs. T. Hiromoto (Arb. med. Univ. Okayama, 1940, **6**, 425—447).—Lactic acid is formed from α-alanine (*d*-, *l*-, and *dl*-) but not from β-alanine. H. H. K.

Correlation between egg-carrying setæ and cement glands in decapod crustacea. A. J. Lloyd and C. M. Yonge (Nature, 1940, **146**, 334).—After the moult of sexual maturity in *Crangon vulgaris* females the egg-carrying setæ are fully developed, and cement glands appear. After the liberation of eggs the animal moults to the "neuter" condition, the ovary increases in size, and the cycle is repeated throughout life. The setæ and cement glands are in such intimate functional association that they ma be regarded as a single secondary sexual character. E. R. S.

Body size as [sex] factor in interpreting effect of hormone injections in baby chicks. I. L. Kosin (Amer. J. Physiol., 1940, **129**, 283—288).—In chicks the wts. of the testis, ovary, and Bursa Fabricii are highly correlated with body-wt. There is a breed difference in the wt. of the testis and Bursa Fabricii in White Leghorn and Barred Rock chicks. Importance of organ- and body-wt. relationship in interpreting results of hormone injections in baby chicks is pointed out. Some apparently high simple correlations between sex organs are spurious in nature when the data are analysed by partial correlations. M. W. G.

Fertilising and sex-determining substances in plants and animals. R. Kuhn (Angew. Chem., 1940, **53**, 1—6).—A review. W. McC.

Allergic reactions of female genital tract. E. G. Murray (Bol. Acad. Nac. Med., 1940, 97—115).—Female guinea-pigs were sensitised to foreign proteins (horse serum, egg-white). Vaginal and intrauterine instillation of the same antigens produced a local inflammatory reaction in the vaginal or uterine mucosa. Eosinophil granulocytes appear in the vaginal secretions during the reaction. During œstrus these cells are not found. Vaginal instillations do not desensitise the allergic animals. J. T. L.

New technique for staining vaginal smears. II. E. Shorr (Science, 1940, **91**, 2372, 579—580).—A revised staining technique (A., 1940, III, 651) is given in detail. American-produced stains are substituted for imported varieties. When the hæmatoxylin stain can be omitted smears can be stained in 5 min. E. R. S.

Effect of radium and radon on ovary. S. Russ and G. M. Scott (Lancet, 1940, **238**, 1048).—Rn acts very much like Ra in its destructive effects on the rabbit's ovary. C. A. K.

Mitosis in normal endometrium. W. B. Dublin (Proc. Staff Mayo Clin., 1939, **14**, 783). H. H. K.

Changes in connective tissue of uterus and vagina of rat associated with advancing age. J. M. Wolfe, E. Burack, W. Lansing, and A. W. Wright (Science, 1940, **91**, 577—578).—Changes were studied by methods differentiating collagen from reticulum. The uterine connective tissue of the young rat was chiefly reticulum, which was replaced by collagen as age increased. The size and density of the collagenous fibres in the vaginal mucosa increased with age. E. R. S.

Artificial menopanse by irradiation. W. S. Peck, J. T. McGreer, N. R. Kretzschmar, and W. E. Brown (Radiology, 1940, **34**, 176—183).—

Permanent menopause was produced in 96% of 148 cases who received more than 500 r. on the ovaries at 200 kv., but even with 125 r. upwards more than half the cases were castrated. Menopause was also produced in 9 out of 10 cases who had more than 1500 mg.-hr. of intrauterine Ra and in 71% of 52 cases having 500—1500 mg.-hr. A formula is given for calculating the surface dose to multiple portals necessary to produce a planned ovarian dose in pelves of different measurements. Menopausal symptoms were no more severe or frequent than those following surgical castration. E. M. J.

Prostigmine and delayed menstruation. S. Soskin, H. Wachtel, and O. Hechter (J. Amer. Med. Assoc., 1940, **114**, 2090—2091).—Prostigmine caused menstrual flow in 25 non-pregnant women with menstrual delay, but was ineffective in pregnant women. It probably acts by causing hyperæmia. C. A. K.

Artificial impregnation. W. H. Cary (J. Amer. Med. Assoc., 1940, **114**, 2183—2187).—Clinical results of artificial impregnation are reported. C. A. K.

Vitamin-*E* and habitual abortion. A. L. Bacharach (Brit. Med. J., 1940, I, 890).—The results of vitamin-*E* administration to women for habitual abortion are analysed. C. A. K.

Vitamin-*E* and habitual abortion. Council on Pharmacy and Chemistry (J. Amer. Med. Assoc., 1940, **114**, 2214—2218).—A review. C. A. K.

Care of fœtus and newborn. R. M. Tyson (Arch. Pediat., 1940, **57**, 337—348).—A lecture. C. J. C. B.

Eating of bone by pregnant and lactating grey squirrel. A. J. Carlson (Science, 1940, **91**, 573).—The squirrel was observed daily eating old dried bone which had been in the soil for 1—3 years. Males and non-pregnant females were not seen to do this. E. R. S.

Toxæmias of pregnancy. S. Kumar and V. Nath (Indian J. Med. Res., 1940, **27**, 979—995).—A detailed biochemical examination of blood and urine was made on 75 cases of toxæmia of pregnancy and on 25 normal pregnancies at the same period of gestation. Hypoproteinæmia and hypocalcæmia were found, particularly in those patients of the eclamptic and nephritic groups. The urine showed poor excretion or absence of vitamin-*C*. The diet was deficient in "protective foods." H. B. C.

Genesis of hydatidiform mole. A. T. Hertig and H. W. Edmonds (Arch. Path., 1940, **30**, 260—291).—A series of 1027 spontaneously aborted ova and 74 hydatidiform moles were studied with respect to the genesis of hydatidiform degeneration. Hydatidiform degeneration of the chorionic villi of pathological ova probably begins at the 5th week of pregnancy, when the fœtal circulation should begin to function. The fœtal circulation in the chorion of the pathological ovum fails to function because of extreme defectiveness or absence of the embryo. The vascular "anlagen" disappear coincidentally with the onset of hydatidiform degeneration, both processes being a function of absence or of defectiveness of the circulation. A typical hydatidiform mole is derived from a true pathological ovum in which the embryo was either absent or very defective from the beginning and which, for reasons unknown, failed to abort at the usual time. (15 photomicrographs.) C. J. C. B.

Dysgerminoma. M. B. Dockerty (Proc. Staff Mayo Clin., 1939, **14**, 545—550). H. H. K.

Effects of Roentgen rays on gonads of sexually mature domestic fowl. J. M. Essenberg and R. J. Karrasch (Radiology, 1940, **34**, 358—365).—The gonadal areas of White and Brown Leghorn hens and roosters were irradiated from the back with single and divided doses of 400—2200 and 1276—4200 r. respectively. Initial injury of the seminiferous epithelium or the ovarian follicle was obtained with the lowest doses, follicular disintegration by 800 r., and total destruction by about double these doses. The order of radiosensitivity found in mammalian testes was confirmed. The germinal epithelium was injured by 400 r. and destroyed by 1200 r. A brown melanin-like pigment was found in variable amount in the stroma of irradiated testes and ovaries. E. M. J.

Effect of lecithin and cholesterol on milk secretion and composition. D. Torrisi (Arch. Fisiol., 1940, **39**, 431—457).—In experiments on two goats (38 and 39·5 kg.) intramuscular injection of 0·4—0·8 g. of lecithin (emulsion in saline) every day for a week increased both body-wt. and amount of milk secreted; higher doses produced the opposite effects. Milk composition was not affected. Cholesterol oleate (dissolved in almond oil) in daily doses of 0·2—0·6 g. increased total milk-lipins and cholesterol. Injection of lecithin + cholesterol oleate (0·4—1·2; 0·1—0·3 g. per day) increased body-wt., milk secretion, inorg. and casein-P, and total lipins and cholesterol in the milk. Higher doses induced the opposite effects. S. O.

Histophysiology of human nipple. M. H. Keiffer (Bull. Acad. Méd. Belg., 1940, [vi], **5**, 84—106).—A lecture. H. B. C.

Disturbances in reproductive functions caused by hypothalamic lesions in female guinea-pigs. F. L. Dey, C. Fisher, C. M. Berry, and S. W. Ranson (Amer. J. Physiol., 1940, **129**, 39—46).—Lesions in the hypothalamus of female guinea-pigs, between the optic chiasma and the attachment of the infundibular stalk, caused sterility and other reproductive disturbances. Some of the animals had a continuously open vagina, hypertrophied uterus, and ovaries showing a high degree of follicular development without ovulation; others had the vagina continuously closed, with atrophic uterus and ovaries resembling those of hypophysectomised animals although there was no gross damage to the pituitary and no retardation of body growth. Many of the guinea-pigs developed diabetes insipidus. M. W. G.

Progestational effect of deoxycorticosterone. J. B. Sosa Gallardo (Rev. Soc. argent. Biol., 1939, **15**, 523—526).—Deoxycorticosterone acetate (5 mg. per day for 5 days) was injected subcutaneously into female *Didelphys azaræ*, after injecting 1000 i.u. of œstrone daily during 20 days. Typical progest-

ational modifications in the uterus, similar to those produced by progesterone, were observed. Animals not treated previously with œstrone did not react in this way to 5 mg. of deoxycorticosterone acetate given daily for 20 days, nor did one castrated animal treated in the same way. J. T. L.

6(α)-Hydroxyprogesterone.—See A., 1940, II, 282.

Œstrogenic substance in rice germ. H. Asikari (Arb. med. Univ. Okayama, 1940, **6**, 448—456).—150 kg. of rice germ were extracted with 90% alcohol and saponified. A benzene extract was œstrogenic. H. H. K.

Purpura due to injection of œstrogenic substance. E. L. Loftis (Arch. Dermat. Syphilol., 1940, **42**, 138—139).—A case report. C. J. C. B.

Œstrogens and missed abortion. T. N. A. Jeffcoate (Lancet, 1940, **238**, 1045—1048).—After intrauterine death of the fœtus the blood-œstrogen falls. Satisfactory expulsion of products of conception occurred in 48 out of 55 cases after œstrogen administration due to increased excitability of the uterus. C. A. K.

Stilbœstrol in prepuberal vulvovaginitis. J. D. Russ and C. G. Collins (J. Amer. Med. Assoc., 1940, **114**, 2446—2448).—Stilbœstrol was successfully used by mouth in the treatment of 25 cases of prepuberal gonococcal vulvovaginitis. There were very few toxic effects. C. A. K.

Prolonged œstrogen administration. B. Zondek (J. Amer. Med. Assoc., 1940, **114**, 1850—1854).—70,000 i.u. of œstrogen inhibit the normal ovarian cycle in women by blocking the gonadotrophic secretion of the anterior pituitary and preventing corpus luteum formation. 600,000 i.u. cause glandular cystic hyperplasia, and 6,000,000 i.u. in 60 days prevent follicle ripening as well as corpus luteum formation. No signs of malignant changes were seen in the uterus but an eosinophil adenoma of the anterior pituitary was seen with the largest dose of œstrogen. C. A. K.

Effect of theelin on fracture repair. G. A. Pollock (Proc. Staff Mayo Clin., 1940, **15**, 209—214).—Administration of theelin influences calcification and accelerates the firm union of fractures in experimental rats. H. H. K.

Determination of urinary œstrogens in uterine hæmorrhage. H. A. Lin (Chinese Med. J., 1940, **57**, 216—230).—Urinary excretion of œstrogens was diminished or absent in endometrial hyperplasia. Œstrogen output was increased, and uterine hæmorrhage checked, by injection of an extract of the anterior pituitary. W. J. G.

Effect of œstrogens on pouch of marsupial, *Trichosurus vulpecula*. A. Bolliger and A. Carrodus (J. Proc. Roy. Soc. New South Wales, 1940, **73**, 218—227).—Administration of up to 10^5 units of œstradiol dipropionate causes contraction of the pouch, hypertrophy of the pouch muscle, and secretion of pigment within the pouch. F. O. H.

Female hormone [œstrogen] in bituminous coal from Shantung province. T. H. Tang, W. C. Wang, and C. C. Peng (J. Amer. Pharm. Assoc., 1940, **29**, 302—303).—8 samples of the coal from different localities, digested with H_2SO_4 and extracted with ether, yielded oils containing 40—200 r.u. (Allen–Doisy technique) per kg. of coal. F. O. H.

Effect of œstrogens and androgens alone and in combination with chorionic gonadotrophin on ovary of hypophysectomised rat. R. I. Pencharz (Science, 1940, **91**, 554—555).—Female rats hypophysectomised at 21—23 days had pellets of stilbœstrol, œstradiol dipropionate, or testosterone propionate embedded in the subcutaneous tissue. Some had 75 r.u. of antuitrin *S* in 3 doses. Testosterone had no effect on ovarian wt.; œstradiol and stilbœstrol increased ovarian wt. 2- and 4-fold, and when in combination with antuitrin 3- and 14-fold, over controls. 130—170 μg. per day of stilbœstrol and 40—63 μg. of œstradiol per day were average absorptions. Ovaries of animals treated with stilbœstrol consisted of medium-sized follicles packed tightly together with reduced interstitial tissue; when treated with antuitrin *S* as well, the follicles were enlarged, many corpora lutea were present, and 2 hæmorrhagic follicles were seen. Other treatments did not result in such ovarian development. E. R. S.

Effects of crystalline sex hormones on blood-lipins of bird. C. Entenman, F. W. Lorenz, and I. L. Chaikoff (J. Biol. Chem., 1940, **134**, 495—504; cf. A., 1939, III, 57).—The total fatty acids, phospholipins, and cholesterol in the blood of chicks are increased by intramuscular injection of stilbœstrol, œstradiol benzoate, œstrone, œstradiol, and ethinyl-œstradiol, but not by testosterone, progesterone, or deoxycorticosterone acetate. E. M. W.

Electrophoretic homogeneity of gonadotrophic hormone from pregnant mare's serum. C. H. Li, H. M. Evans, and D. H. Wonder (J. Gen. Physiol., 1940, **23**, 733—739).—The purified hormone (cf. Vole and Goss, A., 1940, III, 403) was electrophoretically homogeneous (isoelectric point p_H 2·60—2·65). From the tryptophan and tyrosine contents, the min. mol. wt. was calc. to be 15,000. The substance contains about 14% of galactose. Keten treatment caused marked loss of physiological activity; in contrast to human chorionic gonadotrophic hormone, the activity of this hormone thus seems to depend on presence of free amino-groups. D. M. N.

International "chorionic gonadotrophin" standard. E. B. Del Castillo and J. C. Fauvety (Rev. Soc. argent. Biol., 1939, **15**, 412—416).—The international standard powder was injected subcutaneously in 6 doses (0·5 c.c. twice daily) into 23-day-old female rats. The animals were killed 24 hr. after the last dose and the wt. of uterus, ovary, and adrenals determined. ½ unit did not produce opening of the vagina, but increased uterine wt. This increase was proportional to the dose employed up to 25 units and reached 5 times the control; with 50 and 100 units no greater increase occurred. The ovary also increased in wt. in proportion to the dose; with 100 units it was 3 times the size of the controls.

The adrenal showed a slight increase in wt. (30% with 25 units). One unit or more produced opening of the vagina 48 hr. after the last dose was given. These effects were not observed in castrated rats. J. T. L.

Action of pregnancy urine on castrated male guinea-pigs. O. Nally-Porte (Arch. Sci. phys. nat., 1940, [v], **22**, Suppl., 36—38).—Guinea-pig pregnancy urine, administered to castrated male guinea-pigs, does not increase the wt. of the seminal vesicles or prostate gland nor stimulate the growth of the glans penis. Hence, the masculinising substance of the urine is not identical with the male hormone secreted by the testicle. W. McC.

Oral use of pregneninonol in functional menometrorrhagia. E. C. Hamblen, N. B. Powell, W. K. Cuyler, and C. J. Pattee (Endocrinol., 1940, **26**, 201—207).—Good results were obtained in 7 cases by the use of this substance for 14 days (40—160 mg. daily) per month following œstradiol, 2 mg. daily for 14 days. V. J. W.

Modification of sexual differentiation in genetic female mice by pre-natal administration of testosterone propionate. C. Turner (J. Morph., 1939, **65**, 353—381).—The administration of large amounts of testosterone between the 10th and 14th day of gestation induces varying degrees of persistence of Wolffian duct derivatives in genetic female offspring. This treatment does not suppress Müllerian duct development in genetic females nor affect their retention in genetic males. The administration of large amounts of androgen during intrauterine development does not prevent differentiation of the ovarian cortex nor induce hypertrophy of the ovarian medulla. Such treatment, however, does impair ovarian function as is indicated by the absence of cyclic œstrous periods and by the failure of ovulation and luteinisation. The ovarian response resembles that produced by *X*-irradiation but is believed to be mediated by inhibition of the hypophysis. J. D. B.

Social hierarchy in ring-doves. II. Effect of treatment with testosterone propionate. M. A. Bennett (Ecology, 1940, **21**, 149—166).—Intramuscular injection of testosterone propionate in low-ranking submissive members of a flock of ring-doves of either sex results in an advance of status, increased aggressiveness, and with females the development of male sex behaviour characteristics. L. G. G. W.

Effect of unilateral castration on spermatogenesis. J. Edwards (Proc. Roy. Soc., 1940, **B**, **128**, 407—421).—In contrast to the ovary, unilateral castration does not cause compensatory hypertrophy of function of the remaining testis. The rate of production of spermatozoa bears a linear relation to the wt. of the testis. In the rabbit, the passage of spermatozoa through the epididymis may occupy 4—7 days. F. B. P.

(A) **Pædogenetic male cycle in *Salmo salar*, L.** J. W. Jones and J. H. Orton. (B) **Histological changes in testis in sexual cycle of male salmon parr.** J. W. Jones (Proc. Roy. Soc., 1940, **B**, **128**, 485—499, 499—509).—(A) Ripe male parr gradually disappear during the spawning season as the no. of males with spent gonads increases, suggesting that ripe male parr spawn on the salmon redds. All the male smolts from English and Welsh rivers had quiescent testes, either spent or immature and virgin. Two types of male smolts therefore migrate to the sea. Pædogenesis in the male occurs throughout its geographical range.

(B) The tube-like undeveloped gonads of the parr show migration and growth of germ cells, but no other spermatogenic changes. As development progresses, the testes widen first at the anterior end. Later the widening progresses posteriorly, and a gradual flattening occurs. During spawning the testes begin to collapse, but the duct remains full of sperm. Finally the duct empties and becomes translucent, and further collapse of the testis is associated with longitudinal folds on the testicular portion. Various characteristic colour changes occur. This cycle is accompanied by the production first of spermatogonia and then of sperm. Smolts showed no ripe or ripening testes. F. B. P.

(xiii) DIGESTIVE SYSTEM.

Cytology of gastric contents. R. E. Mulrooney (Proc. Staff Mayo Clin., 1940, **15**, 81—85).—The average total cell count of 11 normal subjects was 232 per cu.mm. (range 80—530), 16% of which were leucocytes and 84% epithelial cells. The average total cell count in 13 cases of gastritis was 1812 per cu.mm. (range 290—6800), 40% of which were leucocytes. H. H. K.

Effect of olive oil and cod-liver oil on gastric secretion in dog. O. Komarov and S. A. Komarov (Canad. Med. Assoc. J., 1940, **43**, 129—133).—A single small dose of olive oil or cod-liver oil (1 c.c. per kg. body-wt.), introduced a short time before a test-meal of meat into the stomach of a dog with a Pavlov pouch, reduced the vol., acidity, and pepsin content of the gastric juice secreted by the pouch. This inhibition was especially marked during the first 2—3 hr. There was no effect on evacuation time; after cod-liver oil, peptic activity increased during the 5th and 6th hr. of secretion. The daily addition of a similar small dose of olive oil or cod-liver oil to a standard diet for 1 or 2 weeks likewise depressed the secretory activity of the Pavlov pouch, especially of acid. Olive oil inhibited gastric secretion uniformly throughout the 24-hr. period of observation, whereas after cod-liver oil a stimulatory effect on the peptic cells was observed during the later hr. of digestion. Cod-liver oil administered daily may exert a cumulative effect on the activity of the gastric glands. C. J. C. B.

Pancreatic enzymes in patients with epigastric complaints. L. Ehrhardt (Klin. Woch., 1939, **18**, 1600—1603).—The resistance to atoxyl of pancreatic lipase in serum was determined by the method of Rona and Michaelis as a test of pancreatic efficiency. M. K.

Concentration of serum-amylase and serum-lipase in pancreatic disease. M. W. Comfort and A. E. Osterberg (Proc. Staff Mayo Clin., 1940, **15**, 427—432).—Increased activity of serum-lipase and

-amylase was found an efficient test for pancreatitis, but less so for malignant disease of the pancreas, in a large no. of cases. H. H. K.

Chronic regional enteritis occurring in three siblings. C. H. Scheifley (Proc. Staff Mayo Clin., 1939, **14**, 479—480).—Regional enteritis affected 2 sisters and one brother of a Jewish family. In case 1 the condition was limited to the terminal portion of the ileum. In case 2 the terminal portion of the ileum and the cæcum and, later, multiple areas in the small bowel were involved. In case 3, the terminal portion of the ileum was affected and there was also irregular but extensive involvement of the colon as far as the splenic flexure. H. H. K.

Pectin–agar for diarrhœa in infants. P. J. Howard and C. A. Tompkins (J. Amer. Med. Assoc., 1940, **114**, 2355—2358).—Clinical reports. C. A. K.

Gastro-intestinal hæmorrhage from otherwise symptom-less lesions. G. B. Eusterman (Proc. Staff Mayo Clin., 1939, **14**, 513—515).—A lecture. H. H. K.

Radiological studies of alimentary tract of normal monkey (*Macacus sinicus*). J. R. Dogra (Indian J. Med. Res., 1940, **27**, 1117—1119).—The close resemblance of the physiological reactions of the alimentary tract of man and monkey is shown. H. B. C.

Experimental production of digestive tract ulcerations. A. Penner and A. I. Bernheim (J. Exp. Med., 1939, **70**, 453—460).—Evidence of the production of tissue necrosis by vasospasm is afforded by the association of gastro-intestinal changes in dogs, cats, rabbits, and guinea-pigs with shock resulting from intraperitoneal injection of adrenaline hydrochloride. The rabbit and guinea-pig show congestion, œdema, and hæmorrhage in the submucosa followed by ulceration of the mucosa, which is histogenetically similar to human cases. The dog and cat have arterio-venous anastomoses in the submucosa and the primary lesion in these animals is therefore in the mucosa. A. C. F.

Chronic ulcerative colitis with marked deficiency state. L. G. Kindschi (Proc. Staff Mayo Clin., 1939, **14**, 686—688).—A marked deficiency state resulted with symptoms of beriberi and pellagra. The patient recovered after treatment with blood transfusions, liver extract, nicotinic acid, thiamin chloride, and neoprontosil. H. H. K.

(xiv) LIVER AND BILE.

Urinary clearance of free chloral in normal and liver-damaged dogs and possibility of using it as test for liver function. B. Mukerji and R. Ghose (Indian J. Med. Res., 1940, **27**, 757—763; cf. A., 1940, III, 135).—Free chloral hydrate, 200 mg. per kg., is eliminated to a negligible extent in normal dogs. The same dose in dogs with acute or chronic liver damage from CCl_4 gives a significant and well-marked increase in the excretion of free chloral. This substance is suggested for liver function tests in man. H. B. C.

Elimination of conjugated glucuronic acid as measure of hepatic efficiency. B. Mukerji and R. Ghose (Indian J. Med. Res., 1940, **27**, 765—775).—The urinary excretion of conjugated glucuronic acid by rabbits and dogs before and after administration of chloral hydrate, after liver damage induced by intermittent toxic doses of CCl_4, was followed. In early stages of liver damage, the excretion of glucuronic acid was increased or irregular, but in later stages of damage, excretion was decreased. H. B. C.

Creatine production in liver and kidney. H. Borsook and J. W. Dubnoff (J. Biol. Chem., 1940, **134**, 635—639; cf. A., 1940, III, 311).—Cat, dog, rabbit, rat, guinea-pig, frog, and pigeon liver slices produce creatine from glycocyamine, the reaction being accelerated by methionine in the case of all but guinea-pig and rabbit. When liver slices are replaced by kidney slices, creatine production is appreciable, with and without addition of methionine, only in the case of pigeon. Small amounts of creatine are produced also from pre-existing precursors in kidney slices other than those of pigeon and in liver slices of guinea-pig, pigeon, and rat. Power to produce creatine from glycocyamine or the precursors is lost when the structure of the organs is destroyed. The results indicate that creatine is normally produced by methylation of glycocyamine in the liver. Possibly methionine acts as methylating agent. W. McC.

Co-enzyme I and riboflavin content of livers of rats. C. J. Kensler, K. Suguira, and C. P. Rhoads (Science, 1940, **91**, 623).—Vals. are given for rats on normal, basal, basal with butter-yellow (dimethylaminoazobenzene), and basal diet with butter-yellow and dried brewers' yeast for 50—110 days. The riboflavin and co-enzyme I contents of livers of animals given basal diet with butter-yellow only was markedly lower than others, but the respiratory rate of liver slices did not change. The co-enzyme I content of kidney did not change. Riboflavin or co-enzyme I determinations on liver serve as a useful index of protective effect of dietary supplement (against tumour production by butter-yellow). E. R. S.

Liver disease and migraine. C. G. Morlock and W. C. Alvarez (J. Amer. Med. Assoc., 1940, **114**, 1744).—7% of 215 cases of liver and biliary tract disease had migraine; 14% of 216 cases with no signs of liver disease had migraine. C. A. K.

(xv) KIDNEY AND URINE.

Renal threshold for glucose. R. D. Lawrence (Brit. Med. J., 1940, I, 766—768).—The renal threshold for glucose in diabetics and normal subjects shows frequent deviations from the "normal" figure of 170 mg. per 100 c.c. of blood. C. A. K.

Renal lesions after hypertonic sucrose. W. A. D. Anderson and W. R. Bethea (J. Amer. Med. Assoc., 1940, **114**, 1983—1987).—Pathological studies in 6 cases who had received hypertonic sucrose injections intravenously before death showed extreme foamy swelling of the cells of the renal convoluted tubules. C. A. K.

Renal lesions associated with deep jaundice. D. Ayer (Arch. Path., 1940, **30**, 26—41).—In infants with long-sustained uncomplicated jaundice, due to congenital atresia of the bile ducts, renal lesions occur (without oliguria) consisting of focal exudative changes, obstruction of tubules by casts, and phagocytosis of cast material by epithelial cells. Similar lesions occur in patients with transfusion reaction or the hepatorenal syndrome. (7 photomicrographs.)
C. J. C. B.

Osteoporosis associated with extensive metastatic calcification and chronic renal disease. C. L. Brown and I. W. Ginsburg (Arch. Path., 1940, **30**, 108—121).—A case of chronic glomerulonephritis with long-standing renal insufficiency, widespread metastatic calcification, and general skeletal demineralisation is presented. The diagnosis of renal hyperparathyroidism was confirmed by chemical study of the blood, tests of renal function, and investigation of the Ca and P balance. Nodules which from their location, colour, and size resembled parathyroid tissue were found histologically to be moderately hyperplastic thyroid tissue. Parathyroid tissue was not found. The unusual pathological features were great enlargement of a hyperplastic pineal gland and hyperplasia of the anterior lobe of the pituitary owing to basophilic adenoma. (4 photomicrographs.) C. J. C. B.

Pathology of acute and of healed experimental pyelonephritis. G. K. Mallory, A. R. Crane, and J. E. Edwards (Arch. Path., 1940, **30**, 330—347).—Unilateral pyelonephritis was produced by injecting colon bacilli intravenously into rabbits which had partial ligation of one ureter. Acute pyelonephritis similar to that seen in man was produced in the obstructed kidney in 75% of the animals. Extensive pyelonephritis was never found in the unobstructed kidney. By releasing the ureteral obstruction 4—5 days after the injection of bacilli, healing of the pyelonephritic process occurred. Stages of acute, healing, and healed pyelonephritis were thus produced. The acute lesions arise (*a*) from interstitial abscesses starting around clumps of bacteria in the small blood vessels and (*b*) as a result of organisms passing through the glomeruli into the tubules. In the healed lesions thyroid-like areas of colloid casts were found. In earlier lesions a fusion of disintegrating polymorphonuclear leucocytes leads to the formation of these casts. (14 photomicrographs.)
C. J. C. B.

Intravenous administration of casein hydrolysate to nephrotic children and its effect on nitrogen balance and plasma-amino-acid level. L. E. Farr (J. Pediat., 1940, **16**, 679—699).—N balance was studied in 4 nephrotic children, for 15 consecutive weeks. Procedures used in dissolving and storing a suitable casein hydrolysate for intravenous use are described. Intravenous administration of amino-acids as a casein hydrolysate caused flushing of the skin and a sensation of warmth. When infusions were given rapidly or in large quantities, nausea and vomiting were common. No febrile reactions occurred. N given as intravenous amino-acids was assimilated and retained as well as similar amounts of protein-N. After amino-acid injections, the capacity of nephrotic patients to assimilate high-protein diets was increased. The injections had no effect on plasma-protein or fasting plasma-amino-acid level. In 3 of the 4 patients intravenous amino-acid produced an increase in urea clearance which persisted for 3—5 months after injections had been discontinued. C. J. C. B.

Acacia therapy in child with nephrosis. D. F. Falkenstein and R. L. Jackson (J. Pediat., 1940, **16**, 700—703).—In the autopsy of a child with nephrosis given intravenous injections of acacia 6 years previously considerable amounts of acacia were found deposited in the tissues. Of the total amount administered, 7·1% was recovered from the liver, 0·4% from the spleen, and 0·05% from one kidney. During the 6 years, the child did not increase the serum-protein to the normal level, despite the fact that for one period of 14 months he remained free from serious recurrences of the nephrosis. C. J. C. B.

Hypoamino-acidæmia in children with nephrotic crises. L. E. Farr and D. A. MacFadyen (Amer. J. Dis. Child., 1940, **59**, 782—791).—2 hitherto unknown disturbances of amino-acid metabolism in children with the nephrotic type of Bright's disease are described. The plasma-amino-acid-N level is 3—4 mg.-% (normal 5 mg. or over); recovery is accompanied by a rise in plasma-amino-N to normal vals. An acute decline in plasma-amino-acid-N to below 2·5 or nearly 1 mg.-% occurs uniformly with the clinical nephrotic crises described. The crisis occurs without infection. The acute clinical manifestations become apparent when the plasma-amino-acid-N drops below the crit. level of 2·5 mg.-%. Recovery from acute symptoms and return of plasma-amino-acid-N to its previous level occur together. Recovery may be as rapid as the onset and take a few hr. There was no delay in protein digestion or absorption. C. J. C. B.

Photometric estimation of glucuronically conjugated substances of the ether-oxide type in the urine. M. Florkin and R. Crismer (Bull. Acad. Méd. Belg., 1940, [vi], **5**, 50—62).—By the method previously described (A., 1940, III, 275) normal urines were found to contain the equiv. of 20—100 mg. of free glucuronic acid per l. Pentoses, glucose (2 g.-%), and ascorbic acid do not interfere.
H. B. C.

(xvi) OTHER ORGANS, TISSUES, AND BODY-FLUIDS.

Lead content of human hair. K. N. Bagchi, H. D. Ganguly, and G. N. Svidar (Indian J. Med. Res., 1940, **27**, 777—791).—Hair contains large amounts of Pb, black hair in women containing the most, grey hair the least; in abnormal exposure to Pb, up to 508 mg. per kg. may be retained. Hindu married Bengalee women's hair contains 180 mg. per kg. due to their use of vermilion adulterated with red Pb; Mohammedan Bengalee women, 50·4 mg. per kg.; Bengalee Hindu men 26·7 mg. (compared with Europeans 20—27 mg.); Bengalee Mohammedan men 42·4 mg. The nature of the Pb compound in hair is

not known but possibly it contains P. Children give lower vals. than adults. H. B. C.

Composition of sweat of Indians. R. N. Chopra, A. C. Roy, and H. K. Biswas (Indian J. Med. Res., 1940, **27**, 931—935).—Sweat collected from Indians in and around Calcutta showed an acid reaction (p_H 4·6—5·9); Cl content of 0·073—0·805% (average 0·387%); the NH_3-N was 10·9—34·2 mg. (average 18·17), and the urea-N 10·4—61·5 mg.-% (average 29·2). H. B. C.

Component glycerides of a typical cow milk fat. T. P. Hilditch and S. Paul and [in part] B. G. Gunde and L. Maddison (J.S.C.I., 1940, **59**, 138—144).—The mixed glycerides (% mol.) of a typical English milk fat from cows at summer pasture were probably approx. " oleo "-mono-C_{4-14}-palmitins 31—22, " oleo "-palmitostearins 8—17, palmitodi-" oleins " 17—4, " oleo "-mono-C_{4-14}-stearins 12—6; smaller proportions of " oleo "-di-C_{4-14} 4—9, mono-C_{4-14}-di-" oleins " nil—10, stearodi-" oleins " 8—1, and " oleo "-dipalmitins 1—5; tri-" oleins " nil—7 (very probably mainly octadecadienodiolein); and fully-saturated glycerides (mono-C_{4-14}-palmitostearins 9, di-C_{4-14}-palmitins 6—7, and small amounts of di-C_{4-14}-stearins, mono-C_{4-14}-palmitins, dipalmitostearins, and palmitodistearins) amounting in all to 19% (mol.). The most abundant components are glycerides containing one radical each of oleic, palmitic, and one of the lower acids (from C_4 to C_{14}): 22—30% of the whole fat; nearly 40% of the fat is made up of " oleo "-mono-C_{4-14}-palmitins, " oleo "-palmitostearins, palmitodi-" oleins," and " oleo "-mono-C_{4-14}-stearins, and there is also 19% of fully-saturated glycerides. The presence of palmitic acid in union with other acids in some 70% of the butter glyceride mols. is noted, and compared with the similar distribution of this acid in the depot fat of the animal, whilst the relative distribution of the lower fatty acids and of stearic acid is discussed in relation to the hypothesis that butter fat is the result of transformation in the mammary gland of preformed oleo-glycerides (including large proportions of palmito-oleo-glycerides).

Swimming bladders of fish as suspensory organs: gas secretion by *Stephanomia*. W. Jacobs (Naturwiss., 1940, **28**, 33—43).—A review dealing with construction of the bladders, the mechanism for increasing or decreasing the amount of gas they contain, the organs which secrete the gas, and the gas vessels. J. N. A.

Chemistry of snakes. I. Nitrogenous extractives of snake muscle. II. Lipins. III. Enzymes of organs. IV. Bile acids. V. Inorganic constituents of muscle. H. Imamura (J. Biochem. Japan, 1939, **30**, 479—490; 1940, **31**, 1—11, 13—19, 21—22, 23—26).—I. Creatine, creatinine, taurine, methylguanidine, and the bases, $C_{10}H_{16}O_4N_4$, $[\alpha]_D^{20}$ +19·65° in water (picrolonate, m.p. 237°), and $C_6H_{14}O_3N_2$, $[\alpha]_D^{20}$ +45·06° in water (dipicrolonate, m.p. 158°), were isolated from aq. extracts of muscles of *Bungarus multicinctus* (taurine absent), *Elaphe carinata*, and a cobra.

II. Data for the acid val., sap. val., Reichert–Meissl val., and I val. of fats extracted by org. solvents from 5 species of snakes are tabulated. Cholesterol, phosphatide, free fatty acid, etc. were isolated from the muscle-fat; a P-containing, N-free substance, m.p. 175°, was yielded by repeated extraction of the lipins with alcohol. The phosphatide had a mol. ratio of P : N of 1 : 2, whilst the neutral fat contained tri-palmitin, -stearin, and -olein, the corresponding fatty acids of which were also present.

III. Data for the amylase, lipase, pepsin, trypsin, urease, arginase, and phosphatase activity of various organs are tabulated and discussed.

IV. Cholic acid and cholesterol were isolated from the bile of 2 species of snakes.

V. Data for contents of K_2O, Na_2O, CaO, MgO, Cl, P_2O_5, SO_3, and SiO_2 in the muscle of 5 species of snakes are tabulated. F. O. H.

Constituents of turtle oil. I. A. Ogata and A. Minato (J. Pharm. Soc. Japan, 1940, **60**, 76—80).—The oil, m.p. 29°, f.p. 16°, d_4^{15} 0·9185, I val. 49·9, CNS val. 39·9, from *Chelonia mydas*, L., contains dipalmitostearin and myristodipalmitin, but no phosphatides. Hydrolysis yields cholesterol and other sterols, hexoic 3·5, lauric 14·2, myristic 7·2, palmitic 15·2, stearic 6·8, tetradecenoic 2·6, hexadecenoic 10·9, and oleic acid 39·4%, and a small amount of a highly unsaturated acid. R. S. C.

Connective tissue, excretory organs, and water exchange in molluscs. N. B. Medvedeva (J. méd., Ukraine, 1939, **9**, 815—841). M. K.

Methods of isolating amyloid from other tissue elements. G. Hass and R. Z. Schulz (Arch. Path., 1940, **30**, 240—259).—Amyloid-bearing tissues obtained post mortem from patients with chronic pulmonary tuberculosis were cut into thin sections with a freezing microtome. 3 types of amyloid were encountered. All were insol. in buffer solutions ranging from p_H 1 to 10. The 3 varieties, whether present in the liver, spleen, or kidney, were sol. at 5—10° in PO_4''' buffer solution at p_H 11. By successive extractions of thin sections of fresh amyloid-bearing liver at p_H 7, 10, and finally 11 it was possible to obtain hepatic amyloid protein in fairly pure form. 2 fractions of protein were obtained. The principal fraction amounted to 85—90% of the total protein extracted at p_H 11. It remained in solution on neutralisation of the solvent. At 15—17% saturation with $(NH_4)_2SO_4$, on addition of acetic acid or on dialysis against distilled water, it began to ppt., and at ½ saturation with $(NH_4)_2SO_4$ was completely pptd. The second protein fraction remained in solution on neutralisation of the alkaline buffer solvent. It was pptd. along with the principal fraction by ½ saturation of the solvent with $(NH_4)_2SO_4$ but was sol. in dil. acetic acid and distilled water. (8 photomicrographs.) C. J. C. B.

Animal lipins. XVI, XVII.—See A., 1940, II, 324.

(xvii) TUMOURS.

Effect of light on the incidence of tumours in painted mice. I. Doniach and J. C. Mottram (Amer. J. Cancer, 1940, **39**, 234—240).—Light is not essential for the production of tumours of the skin in

mice by benzpyrene and cholanthrene. The effect of darkness on the skin of mice painted with benzpyrene is to reduce dermatitis. There is no inhibition of tumour production or of increased hair growth. The effect of strong sunlight on painted mice is to increase dermatitis and reduce tumour production. This inhibiting effect may be associated with the photodynamic (light-sensitising) properties of the hydrocarbon. Dark-coloured benzpyrene prepared without precautions against photo-oxidation is slightly more carcinogenic than benzpyrene purified in the dark. F. L. W.

Carcinogenic and related non-carcinogenic hydrocarbons in tissue culture. II. E. M. H. Creech (Amer. J. Cancer, 1940, **39**, 149—160; cf. A., 1939, III, 697).—20-Methylcholanthrene-choleic acid (0·001 mg. per c.c.) and 1 : 2 : 5 : 6-dibenzanthracene-choleic acid (0·01 mg. per c.c.) increased cell proliferation of mouse fibroblasts in tissue culture. Tenfold or greater concn. retarded growth. Deoxycholic acid (0·01 mg. per c.c.) and choleic acids of phenanthrene (0·01 and 0·1 mg. per c.c.) and of acenaphthene (0·001, 0·01, and 0·1 mg. per c.c.) decreased cell proliferation. Cultures treated with the choleic acids of methylcholanthrene and dibenzanthracene showed a precocious separation of the chromosomes in prophase and metaphase. F. L. W.

Minimum quantity of œstrogen required to induce atypical epithelial growth of uterine mucosa in the guinea-pig. A. Lipschutz, L. Vargas, A. Jedlicky, and P. Bellolio (Amer. J. Cancer, 1940, **39**, 185—198).—A total dose of 4·5 μg. of œstradiol esters (mono-octoate and 17-benzoate 3-*n*-butyrate) produces atypical epithelial growth of the endometrium in the castrated guinea-pig when injected thrice weekly in doses of 0·1 μg. for 3½ months. The changes are more apparent with a total of 37—42 μg. Adenomatous polyps are formed which may occupy the whole cavity of the uterus. With sufficient quantities (total of 37—370 μg. in 3 months) the polyps may descend into the vagina. The threshold is lower for atypical epithelial growths than for fibroids. F. L. W.

Transmission of a human papilloma to monkeys. R. G. Green, R. J. Goodlow, C. A. Evans, W. T. Peyton, and L. A. Titrud (Amer. J. Cancer, 1940, **39**, 161—171).—A small, highly cornified papilloma on the skin of the eyelid of a man was ground with saline and inoculated into the eyes of 3 monkeys. In all 3 cases after 30 days, proliferation of conjunctival epithelium to form a small tumour occurred at the inoculation site. The results are suggestive of the presence of an infectious agent in the human papilloma. F. L. W.

Pathogenesis of multiple hereditary osteochondromatosis. S. A. Jacobson (Amer. J. Cancer, 1940, **39**, 220—223).—Evidence is presented that where cartilage and bone, however formed, are growing together, a mutual polarity may result by which an epiphysis-like structure is produced. This would explain the epiphysis-like structure of cartilaginous exostoses. F. L. W.

Non-specificity of amino-acid configuration in malignant tissue hydrolysates. O. K. Behrens, F. Lipmann, M. Cohn, and D. Burke (Science, 1940, **92**, 32—34).—The views of Kögl and of Arnow *et al.* (cf. A., 1940, III, 747), that cancerous tissue specifically is partly composed of *d*-amino-acids, are criticised in the light of recent work. Unless actual concns. of reactants during hydrolysis are reported close comparison of results cannot be made. E. R. S.

Co-enzyme concentration of tissues. F. Bernheim and A. von Felsovanyi (Science, 1940, **91**, 76).—The co-enzyme concns. of rat tumours are subnormal, thus resembling embryonic tissue. 3 human carcinomas gave only traces of co-enzyme. E. R. S.

Lipoidal antigen produced by certain malignant tumours of mouse. L. Hoyle (Amer. J. Cancer, 1940, **39**, 224—233).—Alcoholic extracts of sarcoma 37, tar carcinoma 2146, and the Mal sarcoma give complement fixation with the sera of mice bearing these tumours. The antigen appears to be of a lipoidal nature and the antigens produced by the 3 tumours are probably identical. No antigen is present in normal mouse tissues and no antibody occurs in the sera of normal mice. Adenocarcinoma 91, Crocker sarcoma 180, and Harding–Passey melanoma do not contain any demonstrable antigen, but the sera of mice bearing these tumours may contain antibody reacting with sarcoma 37 antigen. Mammary carcinoma 63 does not contain antigen and the sera of mice bearing this tumour do not contain antibody. No antigen was found in 3 spontaneous breast tumours and no antibody was found in the sera of mice bearing such tumours. F. L. W.

Glycolysis in tumour tissue. III. Effect of ultrasonic vibrations on growth and glycolysis of Walker sarcoma 319. F. F. Beck and J. C. Krantz (Amer. J. Cancer, 1940, **39**, 245—250).—Ultrasonic vibrations penetrate the epidermis and connective tissue and pass for a limited distance into solid tumour tissue of Walker sarcoma 319. The vibrations are probably absorbed with the production of heat. Vibrations produce extravasation in the epidermis. The effect of repeated 2-min. irradiation suggests a slightly stimulated glycolysis. Indication of growth inhibition was obtained. F. L. W.

Neoplasm. VII. Granulocytes in regressing transplants of spontaneous mouse tumours. C. G. Grand and R. Chambers (Amer. J. Cancer, 1940, **39**, 211—219).—Blood granulocytes appear around transplants of spontaneous tumours before necrosis. The necrosis is centrally located and relatively free from granulocytes. The regression of transplanted fragments of spontaneous tumours is accompanied by an acute inflammatory reaction in which blood granulocytes predominate. It is suggested that the destruction of tumour cells is partly due to the liberation of proteolytic enzymes by disintegration of the granulocytes. F. L. W.

Growth of transplanted mammary fibroadenoma in castrated rats injected with hormones. J. Heiman (Amer. J. Cancer, 1940, **39**, 172—177).—Injection of gonadotrophic hormone (an-

tuitrin *S*) decreased the % of takes of transplanted mammary fibroadenoma in normal female rats. In normal males and castrated males and females the % of takes was increased. Somatotrophic hormone (antuitrin *G*) and small doses of theelin had no effect. F. L. W.

Influence of androgenic hormones on transplanted tumours in white rats. J. Heiman (Amer. J. Cancer, 1940, **39**, 178—184).—Takes of transplanted mammary fibroadenomata in all rats injected with testosterone propionate were reduced to 13·5% as compared with 42·2% in controls. The alteration of fibroadenomata to fibromata and sarcomata increased to 38·5% and 45·7%, respectively, in the injected rats, as compared with 26% and 14% in controls. More male hormone is necessary for the inhibition of fibroadenomata in young than in old rats. F. L. W.

Stimulation of active mesenchyme in cancerous patients by blood transfusion and injection of antireticular cytotoxins. M. P. Fediuchin (J. méd., Ukraine, 1939, **9**, 749—760).—Blood transfusion had a stimulating effect in patients with inoperable cancer or with relapses after operation. Cytotoxic antireticular serum had a more beneficial effect. The best clinical results were obtained by the combined treatment of transfusion + serum. M. K.

Results obtained after administration of antireticular cytotoxic serum in cancerous patients. M. P. Fediuchin (J. méd., Ukraine, 1939, **9**, 761—771).—Intravenous injection of 0·1—0·5 c.c. of antireticular serum (1 : 10 solution) produces a beneficial effect in most of the inoperable cases. General improvement and cessation of pain last from several days to several months. Restoration of cancerolytic power in the patients' serum and monocytic reaction were observed. Normal horse serum in another group of inoperable patients showed no effect. Blood transfusion alone had a less regular and stable effect than antireticular serum. M. K.

Action of cytotoxic sera on protein and nitrogen content of tissues. N. B. Medvedeva (J. méd., Ukraine, 1939, **9**, 717—737).—Repeated injection of small doses of cytotoxic antireticular, antimuscular, and antihepatic serum produces various disturbances in the protein and N composition of tissues. M. K.

Stimulating action of cytotoxic antireticular serum on connective tissue. A. Bogomoletz (J. méd., Ukraine, 1939, **9**, 789—799).—A review. M. K.

Influence of induced hibernation on mouse sarcoma 180. F. Bischoff, M. L. Long, and J. J. Rupp (Amer. J. Cancer, 1940, **39**, 241—244).—Reduction of the body temp. of mice below 20° C. for 7-hr. periods on 5 successive days or for a continuous period of 24 hr. produces a condition resembling hibernation. No permanent effect on the growth of sarcoma 180 in mice so treated was observed. F. L. W.

Pathologic changes observed in human [tumour] tissues subjected to sub-critical temperatures. L. W. Smith (Arch. Path., 1940, **30**, 424—439).—Temp. of 40—50° F. applied locally to tumours regularly produced regressive changes going on to necrosis, or even occasionally to disappearance of tumour cells. The changes in metastatic tumour tissue from patients who were submitted to general reductions of temp. to 74—90° F. were similar in kind but varied greatly in degree in comparison with those resulting from application of lower temp. locally. In no case were regressive changes encountered until 96—120 hr. of refrigeration had been given, and in some cases no change occurred even after 300 hr. of such low temp. C. J. C. B.

Effect of *X*-rays on genetic constitution of mouse carcinoma. M. C. Reinhard and S. G. Warner (Radiology, 1940, **34**, 438—439).—An adenocarcinoma which had arisen spontaneously in a mouse of the dilute brown strain gave 100% takes when transplanted into animals of the same strain, yielded no growth whatsoever in other pure strains (*e.g.*, Little's C57 black and Strong's CBA), gave 100% takes in the F_1 hybrids of the first and any of the second strains, and 75% takes in the F_2 generation. After irradiation of the tumour *in vivo* (the rest of the animal being shielded) with 100 r. at 200 kv. (the lethal dose for the tumour being about 1350 r.) and transplantation a week later into 46 mice of the previously resistant strains it gave 50% takes at once and 42% takes in 3 successive retransplants in the C57 strain. E. M. J.

Primary carcinoma in negro. Anatomic distribution of 300 cases. W. S. Quinland and J. R. Cuff (Arch. Path., 1940, **30**, 393—402).—Most of the tumours were found in women between the ages of 46 and 50. In females the organ most frequently involved was the cervix uteri, and the next in frequency was the breast. In males the organ most frequently affected was the prostate and not the digestive tract. The highest incidence in males fell between the ages of 66 and 70. C. J. C. B.

Cancer and climatic conditions during childhood and adolescence. S. Peller, C. S. Stephenson, and C. G. Souder (Amer. J. Hyg., 1940, **32**, A, 39—43).—White persons in the armed forces of U.S.A. were investigated with regard to distribution of primary malignancies between those born in the south and the north. Of the southern group 49·9% of cancers originated in the skin or lip as opposed to 27·4% in those born north. The low total cancer mortality between ages 20 and 64 in the Army and Navy depends on exposure to dermotropic climatic conditions. Effect of exposure to actinic conditions in adolescence and youth is more important than exposure in later life in increasing the frequency of surface cancer and thus decreasing incidence of internal cancer and total mortality. Treatment with ultra-violet light in childhood and adolescence may be a preventive measure against fatal cancer. B. C. H.

Myoepithelial hamartoma of the gastro-intestinal tract. B. E. Clarke (Arch. Path., 1940, **30**, 143—152).—8 cases of benign myoepithelial tumour-like structures of the gastro-intestinal tract are reported. Considerations of the pathogenesis and nomenclature of such findings lead to the suggestion that they be designated as myoepithelial hamartoma. (5 photomicrographs.) C. J. C. B.

(xviii) NUTRITION AND VITAMINS.

Dietary and nutrition survey at Jamshedpur, an industrial town in Bihar. K. Mitra (Indian J. Med. Res., 1940, **27**, 887—906).—An investigation of the food intake of 177 families consisting of 845 persons, carried out in the autumn, is described. H. B. C.

Nutritional investigations on Bengal fish. K. C. Saha and B. C. Guha (Indian J. Med. Res., 1940, **27**, 873—876).—13 different varieties of fish were analysed for water, body fat, total mineral matter, protein, Ca, P, total Fe, and ionisable Fe. H. B. C.

Chinese celery cabbage as supplement to cereal diet. I. Growth, digestibility, roughage effect, biological value, and calcifying potency. P. C. Hsu and W. H. Adolph (Chinese J. Physiol., 1940, **15**, 275—284).—The fresh or dried cabbage in different amounts was given to rats fed on millet, white flour, and soya bean. Ca retention was increased and max. growth occurred when the dry wt. of the cabbage formed 15% of the diet. Digestibility and biological val. of the dietary protein were unaffected by the roughage. N. H.

Analysis of "small cabbage" (*Brassica chinensis*, L.) and biological value of its proteins. C. Y. Chang (Chinese J. Physiol., 1940, **15**, 243—251).—The plant was analysed for Ca, Mg, K, Na, P, Cl, S, protein- and non-protein-N, sol. carbohydrates, neutral fat, free fatty acids, phospholipins, and unsaponifiable lipins. The biological vals. of the proteins in the juice and residue, determined on rats by Mitchell's method at an intake of 10%, were 79 and 64, respectively. N. H.

Nutritive value of proteins of rice and its by-products. II. Effect of amino-acid additions on growth. M. C. Kik (Cereal Chem., 1940, **17**, 473—476; cf. A., 1939, III, 700).—Paired-feeding experiments showed beneficial results from supplementing the proteins of whole and polished rice with cystine, methionine, and lysine, but not with tryptophan. Cystine did not promote growth as a supplement to the proteins of rice bran and polishings. T. M.

Feeding experiments with decomposition products of proteins. XV. Blood picture and resistance against infection in mice so fed. S. Mayeda, K. Fujii, H. Abe, and M. Tsurumi (Bull. Inst. Phys. Chem. Res. Japan, 1940, **19**, 714—720).—Mice fed on diets containing (*a*) fish protein, (*b*) decomp. products of fish protein, (*c*) ordinary natural food exhibited no variation in the no. of erythrocytes or in hæmoglobin. The no. of leucocytes and the survival rate 48 hr. after injection with typhoid bacilli were (*a*) 100, 44; (*b*) 50, 25; (*c*) 66, 62·5%, respectively. H. G. R.

Comparison of nutritive value of refined coconut oil and butter fat. R. S. Harris and L. M. Mosher (Food Res., 1940, **5**, 177—184).—Rats maintained on a ration containing 25% of coconut oil increased in wt. more rapidly than those fed on a ration containing 25% of butter fat. The rats maintained on these high-fat rations showed only slight evidence of fatty infiltration of the liver or other pathological abnormality. E. C. B. S.

Comparative nutritive value of butter fat and certain vegetable oils. E. J. Schantz, C. A. Elvehjem, and E. B. Hart (J. Dairy Sci., 1940, **23**, 181—189).—Butter fat gave better growth of young rats than vegetable oils when emulsified in skim milk. The factor responsible was in the saponifiable fraction and could not be identified with the recognised essential unsaturated fatty acids. J. G. D.

Chinese celery cabbage. I. Carbohydrate. P. C. Chang and W. H. Adolph (Chinese J. Physiol., 1940, **15**, 285—288).—Approx. 12% of the dry wt. consists of utilisable carbohydrate. The total available energy of the fresh vegetable is 8·5 kg.-cal. per 100 g. N. H.

Available iron in fish. K. C. Saha and B. C. Guha (Indian J. Med. Res., 1940, **27**, 877—886).—Available Fe occurs as an Fe–protein complex, not reacting with 2 : 2′-dipyridyl, and easily hydrolysable by pepsin and trypsin after which the Fe can be determined with 2 : 2′-dipyridyl. A method for determining total available Fe is described involving peptic digestion followed by reduction with Na hydrosulphite or treatment with 2 : 2′-dipyridyl. Available Fe by this treatment or after treating with 10% acetic acid is greater than that obtained on undigested tissue. Peptic digestion (complete in 2—3 hr.) gave higher vals. than tryptic digestion for available Fe. During egg-formation available Fe of fish muscle is decreased, but that of the roe is very high. H. B. C.

Fluorine contents of foodstuffs in Szechuan. L. T. Cheng and T. P. Chou (Chinese J. Physiol., 1940, **15**, 263—267).—Data for 7 varieties of tea, 14 of NaCl, 4 of cereals, 26 of vegetables, and 2 of fruits are tabulated. Tea and some vegetables had a high content (up to 91 mg. per kg.), fruits and cereals a low one. N. H.

Clinical studies of vitamin-*A* in infants and children. C. D. May, K. D. Blackfan, J. F. McCreary, and F. H. Allen, jun. (Amer. J. Dis. Child., 1940, **59**, 1167—1184).—A convenient reliable method for the determination of vitamin-*A* and carotenoids in small amounts of blood is described. It is that of McCoord and Luce-Clausen (Physiol. Abs., 1935, **19**, No. 3209) except that the reagent was made with 22% of $SbCl_3$ in $CHCl_3$. The level of -*A* in the blood is a useful, direct, clinical test for early diagnosis of -*A*-deficiency. In infants and children -*A* deficiency may be detected by a low level of blood-*A* before other reliable clinical signs appear. C. J. C. B.

Carotene and vitamin-*A* in nutrition of growing dairy cattle. R. E. Ward, S. I. Bechdel, and N. B. Guerrant (J. Dairy Sci., 1940, **23**, 115—124).—Growing calves require at least 11 μg. of the vitamin per day per lb. body-wt. The requirement depends, however, on the source of vitamin. The order of availability was: carotene concentrate, lucerne hay, corn silage, cornmeal, timothy hay, and lucerne molasses silage. J. G. D.

Utilisation of vitamin-*A* added to mineral oil. A. C. Curtis and P. B. Horton (Amer. J. med. Sci.,

1940, **200**, 102—107).—3 groups of rats, showing signs of vitamin-*A* depletion, resumed as good growth on 2, 4, or 6 units of -*A* in 0·5 c.c. of mineral oil daily as rats receiving the same amount of -*A* in 0·5 c.c. of cottonseed oil daily. Because of the preferential solubility of carotene in mineral oil, enough -*A* should be taken with or dissolved in mineral oil whenever it is administered. C. J. C. B.

Relative overgrowth of central nervous system in vitamin-*A* deficiency in young rats. Explanation of neurological lesions in -*A* deficiency. S. B. Wolbach and O. A. Bessey (Science, 1940, **91**, 599).—By preventing vitamin-*A* storage up to 21 days of life and then giving a completely -*A*-deficient diet, ataxia and paralysis are produced in rats at 50 days, accompanied by degeneration of the peripheral nerves and nerve fibres in various tracts of the spinal cord and the cerebellar peduncles. The explanation is that the relative overgrowth of the nervous system results in mechanical damage. Herniations of the nerve roots occur in the spinal canal, cerebrum, and cerebellum. Experiments also indicate that unequal growth of bone and nerves occurs from 40 to 60 days of life. When carotene was added to the deficient diet at 42 days no nervous lesions occurred. It is concluded that, since these results are explicable in mechanical terms, the growth and physiology of the nervous system are independent of -*A*. E. R. S.

Malnutrition and hyperkeratosis [of skin follicles]. J. Pemberton (Lancet, 1940, **238**, 871—872).—Follicular hyperkeratosis, seen in 5% of 3000 children during a nutritional survey in Great Britain, was considered to be similar to the condition previously described by Frazier and Hu (Ann. int. Med., 1931, **48**, 507) and attributed to vitamin-*A* deficiency. C. A. K.

Treatment of eye, skin, and mouth lesions due to vitamin deficiencies. L. Nicholls and A. Nimalasuriya (Indian J. Med. Res., 1940, **27**, 705—710).—Dry skin and phrynoderma responded to treatment with vitamin-*A*; the latter condition was not cured by linoleic acid. Angular stomatitis and erosion of the tongue responded to yeast extract but not to nicotinic acid. H. B. C.

Effect of carotene on peripheral nerve lesions produced by vitamin-*A* deficiency. M. V. R. Rao (Indian J. Med. Res., 1940, **27**, 731—734).—Adequate amounts of carotene, added to a vitamin-*A*-deficient diet in rabbits, cured the xerophthalmia but not the lesions in the peripheral nervous system. H. B. C.

Vitamin-*A* content of liver and depot fats of Indian fish. P. K. Seshan (Indian J. Med. Res., 1940, **27**, 711—720).—The liver oils of 16 different species of fish were rich in vitamin-*A*; details of the respective amounts compared with cod-liver oil are given. Steaming or cooking the oil in water in contact with air caused 20—60% loss of -*A*. The fats deposited around the liver contained no -*A* or carotene. H. B. C.

Vitamin-*A* content of Bengal fish. K. P. Basu, B. C. R. Sircar, and J. C. S. Gupta (Indian J. Med. Res., 1940, **27**, 721—729).—The results are given for the vitamin-*A* content of body and liver oils of various species of fish. Little or none was found in body oils. The livers were rich in -*A*. None of the liver oils of fresh-water Bengal fish showed the characteristic absorption band of $-A_2$. H. B. C.

Vitamin-B_1. M. D. Wright (Chem. and Ind., 1940, 578).—The val. of 15 i.u. of vitamin-B_1 per 100 cal. in the diet is, on the evidence Moran and Booth themselves quote (A., 1940, III, 750), insufficient for good health. 20 i.u. per 100 cal. is the lowest figure approaching the desirable intake. E. C. B. S.

Diagnosis, treatment, and prevention of vitamin-B_1 deficiency. N. Jolliffe (Bull. N.Y. Acad. Med., 1939, **15**, 469—478).

Thiamin and citric acid metabolism. H. A. Sober, M. A. Lipton, and C. A. Elvehjem (J. Biol. Chem., 1940, **134**, 605—616).—In rats on a diet deficient in thiamin and low in citric acid but otherwise adequate, citric acid excretion decreases when the deficiency becomes acute, the decrease being independent of the accompanying inanition. Power to convert injected succinic acid into citric acid is decreased by the deficiency. Administration of curative doses of thiamin to deficient rats results in increase in citric acid excretion, max. vals. (10 times the normal val.) being attained within 4—6 days. The vals. decrease to normal 10—14 days after administration of thiamin. The results indicate that thiamin pyrophosphate is an essential factor in the synthesis of endogenous citric acid from its precursors. W. McC.

Chemical determination of thiamin by a modification of the Melnick–Field method. A. D. Emmett, G. Peacock, and R. A. Brown (J. Biol. Chem., 1940, **135**, 131—138).—Thiamin, alone in solution or in presence of riboflavin, pyridoxine, nicotinic acid, pantothenic acid, or small amounts of ascorbic acid, can be accurately determined by the Melnick–Field method (A., 1939, III, 401, 993), using a Lovibond tintometer. Large amounts of ascorbic acid must be removed by addition of dil. I or $K_3Fe(CN)_6$, or the thiamin determined after adsorption on superfiltrol. The latter method when applied to yeast concentrate, dried brewers' yeast, wheat-germ extract, or elixir gives results agreeing well with those of bio-assay. A. Li.

Riboflavin in pemphigus vulgaris. M. C. Topping and A. F. Knoefel (J. Amer. Med. Assoc., 1940, **114**, 2102).—A successful case report. C. A. K.

Flavin *versus* nicotine. K. Inoue and T. Akō (Bull. Inst. Phys. Chem. Res. Japan, 1940, **19**, 781—784).—The injurious effects of nicotine in rats may be decreased by previous injection of flavin. H. G. R.

Synthesis of nicotinic acid by rats. K. L. Shourie and M. Swaminathan (Indian J. Med. Res., 1940, **27**, 679—683).—Balance experiments were carried out for 9 weeks on 4 groups of rats; 2 had diets supplying 5 μg. and 25 μg. of nicotinic acid respectively, and the other 2 had these diets supplemented by 1 mg. of nicotinic acid daily. The first 2 groups excreted 41 μg. and 47 μg. per rat per day respectively in excess of intake; the other 2 groups

only 83 and 88 μg. There was no difference between the nicotinic acid content of liver, muscles, and blood of the 4 groups. Addition of nicotinic acid to the basal diet containing vitamin-B_1 and flavin did not increase growth-rate. H. B. C.

Nicotinic acid content of cereals and pellagra. W. R. Aykroyd and M. Swaminathan (Indian J. Med. Res., 1940, **27**, 666—677).—The nicotinic acid content of a no. of cereals and cereal products was determined by the CNBr method. Whole wheat, home-pounded raw and parboiled rice, milled parboiled rice, barley, maize, milled raw rice, and the various millets gave decreasing vals. Maize from parts of U.S.A. and Rumania, where pellagra is known to occur, had a nicotinic acid content similar to that of Indian maize, but maize used by Rumanian pellagra cases did not give lower vals. Nicotinic acid in rice is found in germ and pericarp, and parboiling prevents its removal by milling although washing and cooking may do so. Comparison of nicotinic acid content of a pellagra-giving maize diet with a poor rice diet did not explain the association of pellagra and maize as the rice diet contained less nicotinic acid than the maize one. H. B. C.

Pellagra in India ; study of 25 cases in Vizagapatam. T. K. Raman (Indian J. Med. Res., 1940, **27**, 743—756).—Vizagapatam where rice is the main article of diet is an endemic focus for pellagra. Pellagra is classified as primary, primary with incidental disease, and secondary; symmetrical exfoliative dermatitis with well-defined margins is the main diagnostic feature. The majority showed microcytic anæmia; in all 3 types a normal blood picture succeeded treatment. Total blood-proteins and cholesterol were low but were restored with treatment. Low gastric acidity and increased acidity were both found. Increase in total fæcal fat with relative increase of neutral and split fat was a const. finding. Treatment consisted of a liberal protein diet, eggs, liver soup by mouth, Fe for anæmia, HCl for cases with low acidity, and intramuscular liver extract. Nicotinic acid by mouth improved 3 out of 7 cases. H. B. C.

Determination of nicotinic acid : inhibitory effect of cyanogen bromide on the aniline side reactions. D. Melnick and H. Field, jun. (J. Biol. Chem., 1940, **135**, 53—58; cf. A., 1940, III, 779; Harris *et al.*, *ibid.*, 145).—In analyses of biological materials, aniline reacts with substances in the hydrolysates to give colours indistinguishable from that obtained in the test for nicotinic acid. Addition of CNBr either before or after the aniline prevents these side reactions. Aniline, therefore, should not be included in blank tests. A. Li.

Effect of vitamin-B_2 complex on albino rats fed on diets containing nicotine. K. Inoue and A. Shinagawa (Bull. Inst. Phys. Chem. Res. Japan, 1940, **19**, 785—789).—The poisonous effects of nicotine are decreased by vitamin-B_2 and -B_6. In small quantities nicotine can replace nicotinic acid in the diet. H. G. R.

State of nutrition with respect to vitamin-*C* in a southern pediatric clinic. A. S. Minot, K. Dodd, M. Keller, and H. Frank (J. Pediat., 1940, **16**, 717—728).—A survey of the ascorbic acid levels in the serum of 500 young clinic patients living near Nashville, Tenn., was made. 50% of the "normal" children showed vitamin-*C* lack, especially those under 3. During the summer months, a larger % have serum-ascorbic acid vals. above 0·7 mg.-% than in the winter and early spring. In very young children whose dietaries vary less throughout the year, the seasonal difference is less apparent. C. J. C. B.

Synthesised, processed, and natural sources of vitamin-*C* in the mineral metabolism of normal children. M. L. Shepherd, I. G. Macie, H. A. Huscher, and F. C. Hummel (J. Pediat., 1940, **16**, 704—716).—The retention of N and minerals by children was improved by substituting fresh orange juice for an orange–lemon mixture, although the intake of vitamin-*C* was raised only slightly and remained at a low level. When 20 mg. of ascorbic acid were added to diets which contained the orange–lemon mixture as source of -*C*, only Ca retention was improved; although greater relative storage of cations to anions occurred, the total amount of positive and negative minerals stored was reduced. C. J. C. B.

Therapeutic use of vitamin-*C*. G. Dalldorf (Bull. N.Y. Acad. Med., 1939, **15**, 544—553).

Protective action of tissues of scorbutic and normal guinea-pigs against oxidation of vitamin-*C*. K. V. Giri and K. L. Shourie (Indian J. Med. Res., 1940, **27**, 685).—Liver, kidney, and adrenals protected equally, brain extracts less; scorbutic tissues had no action. The protective mechanism is mainly confined to the undialysable and colloidal constituents of tissue extracts; a method has been evolved for separating the protective substances from the sol. enzymes. The action of the extracts diminished on keeping. H. B. C.

Course of excretion of ascorbic acid in urine after its intake in large doses. N. M. Basu and G. K. Ray (Indian J. Med. Res., 1940, **27**, 907—915). —A higher % of total excess output of vitamin-*C* in the day following the intake was excreted in the first 12 hr., this % rising with increasing total excess output. The excretion of -*C* rarely becomes const. and never equals the amount ingested even when the body is apparently saturated. H. B. C.

Average urinary output and state of saturation of Bengali boys with respect to vitamin-*C*. N. M. Basu and G. K. Ray (Indian J. Med. Res., 1940, **27**, 917—929).—The average daily urinary output was less than 15 mg. of total (13 mg. of free) in 12 persons, with no symptoms of scurvy. 5 boys who were taking fruit showed higher vals. All the persons, except the 5 boys taking fruit, required over 1000 (6 over 2000) mg. to become saturated with ascorbic acid. No proportional relationship was found between the average excretion of the vitamin and the state of saturation unless the excretion is above 35 mg. per day. H. B. C.

Excretion of homogentisic acid and other tyrosine metabolites by the vitamin-*C*-deficient guinea-pig. R. R. Sealock and H. E. Silberstein

(J. Biol. Chem., 1940, **135**, 251—258).—Excretion of homogentisic, *p*-hydroxyphenyl-pyruvic and -lactic acids on feeding tyrosine (0·5 g. daily) to vitamin-*C*-deficient guinea-pigs is prevented by administration of 10 mg. per day of *l*-ascorbic acid or 200 mg. (equiv. in antiscorbutic activity) of *d-iso*ascorbic acid. H. G. R.

Rate of dentine formation in incisor teeth of guinea-pigs on normal and on ascorbic acid-deficient diets. P. E. Boyle, O. A. Bessey, and P. R. Howe (Arch. Path., 1940, **30**, 90—107).—Alizarin, which stains the dentine formed during a particular period, was used to measure the variations in rate of deposition that occur in different parts of the incisor teeth of guinea-pigs on adequate diets; these were compared with the rates found in corresponding parts of the teeth of animals on restricted amounts of ascorbic acid. The rate of dentine formation in definite areas near the formative end of the tooth was uniform in animals given the same supplements of ascorbic acid. After a standard depletion period the amount of dentine deposited in this region was shown to vary directly with the amount of ascorbic acid administered. The findings demonstrate a measurable quant. relation between the rates of formation of an intercellular substance (dentine) and the amount of ascorbic acid administered to guinea-pigs. They make possible the development of an objective biological assay method for the determination of vitamin-*C*. (10 photomicrographs.) C. J. C. B.

Evaluation of intradermal dye test for vitamin-*C* in health and disease. I. Bakhsh, B. D. Kochhar, and A. Q. Malik (Indian J. Med. Res., 1940, **27**, 695—703).—The test was performed on 140 healthy people and 200 patients; the vitamin-*C* content of tissues was not proportional to decolorisation time in guinea-pigs. The -*C* content of plasma was sometimes deficient in infections. H. B. C.

Pathology of rickets, with particular reference to changes at cartilage-shaft junctions of the growing bones. E. A. Parr (Bull. N.Y. Acad. Med., 1939, **15**, 495—543).

Vitamin-D_2 and -D_3 in osteomalacia. D. C. Wilson (Lancet, 1940, **238**, 961—962).—Vitamin-D_3 was as effective as -D_2 in cases of osteomalacia and late rickets. C. A. K.

Activation of sterols. J. W. M. Bunker, R. S. Harris, and L. M. Mosher (J. Amer. Chem. Soc., 1940, **62**, 1760—1762).—Monochromatic illumination of ergosterol in ether, feeding the product to groups of 48—49 rachitic rats, and statistical analysis of the results show that light of λ 3025 A. is less effective than that of λ 2652, 2804, 2894, or 2967 A., these latter being equally efficient (cf. A., 1939, II, 18). For activation of 7-dehydrocholesterol, light of λ 2967 A. is more effective than that of λ 2483, 2537, 2652, 2804, or 3025 A. The fact that light of λ 2967 A. is also the most efficient in curing epilated rats confirms the view that 7-dehydrocholesterol, and not ergosterol, is the significant provitamin-*D* of the skin. R. S. C.

Vitamin-*D* content of liver and body oils of Bengal fish. K. P. Basu and J. C. S. Gupta (Indian J. Med. Res., 1940, **27**, 865—871).—Compared with the antirachitic potency of cod-liver oil, the vitamin-*D* content of liver oils of Bengal fish is small, the most potent being one third as active. The relative effectiveness of the different oils is not identical in experiments with rats and chickens. H. B. C.

Occurrence of vitamin-*D* in fresh leafy vegetables. C. Y. Chang and H. Wu (Chinese J. Physiol., 1940, **15**, 253—261).—The effect of feeding with 4 varieties of cabbage was tested on the ash of the tibia of chicks and rats fed on rachitogenic diet. The chicks were not affected; with the rats, the effects were slight but became more definite when fed on the fats extracted from "small cabbage," which contained approx. 0·2 i.u. per 100 g. of fresh vegetable. N. H.

α-Tocopherylquinone and dystrophy in rabbits. C. Golumbic and H. A. Mattill (J. Biol. Chem., 1940, **135**, 339—340).—α-Tocopherylquinone (2—10 mg. daily) obtained by oxidation of *dl*-α-tocopherol with $AuCl_3$ does not prevent or cure dystrophy in rabbits. Previous contradictory results may be due to incomplete oxidation of α-tocopherol by $FeCl_3$. R. L. E.

Identity of vitamin-*H* with biotin. V. du Vigneaud, D. B. Melville, P. György, and C. S. Rose (Science, 1940, **92**, 62—63).—The vitamin-*H* activity that biotin methyl ester should show if biotin and -*H* are identical has been calc. from a yeast assay and confirmed by administration of the ester at various levels to rats showing symptoms of -*H* deficiency. L. S. T.

Vitamin-*K* activity of naphthols and ketotetrahydronaphthalenes. M. Tishler, L. F. Fieser, and W. L. Sampson (J. Amer. Chem. Soc., 1940, **62**, 1881—1882).—3- and 2-Methyl-1-naphthol and 1-keto-3- and -2-methyl-1 : 2 : 3 : 4-tetrahydronaphthalene have vitamin-*K* activity in doses of 1 μg., 2-methyl-α-naphthylamine in doses of 5 μg., and 2-methylnaphthalene in doses of 1 μg.; 1-mg. doses of 1 : 2-, 3 : 2-, and 4 : 1-methylnaphthol are ineffective. Activity depends on readiness of conversion into 2-methyl-1 : 4-naphthaquinone. Activity of the dimethyl ether of this quinone may be due to oxidation, but hydrolysis plays a part *in vivo* since 2-*methyl*-1 : 4-*naphthaquinone di*-2 : 4 : 6-*trimethylbenzoate*, m.p. 204—205°, has only 0·5% the activity of the dibenzoate. Discrepancies between active doses reported by different workers may be due to different assay periods. R. S. C.

Alcohol precipitate factor required by the chick. A. E. Schumacher, G. F. Heuser, and L. C. Norris (J. Biol. Chem., 1940, **135**, 313—320).—Two chick growth factors found in dried brewer's yeast are extracted with 0·24N-HCl and separated by alcohol pptn. on adjustment of the p_H. Factor *R* is sol., factor *S* is pptd., in acid alcohol. *R* is pptd. on neutralisation of the acid alcohol filtrate. These factors are distinct from any vitamins so far identified, but identity of either of them with factor *U* (cf. A., 1940, III, 323) is not excluded. R. L. E.

Identification of the rice factor. Essential nature of the glycine component. H. J. Almquist and E. Mecchi (J. Biol. Chem., 1940, **135**, 355—

356; cf. A., 1940, III, 752).—Creatine and acetates can replace glycine, which may be needed for creatine formation. Muscle-creatine is low in dystrophic birds on the basal diet deficient in the rice factor.

R. L. E.

Loss of carbohydrate metabolism factor during boiling of vegetables. L. G. Wesson (Proc. Soc. Exp. Biol. Med., 1940, **44**, 208—210).—After 3 months on a diet of vegetables which had been boiled for 8 hr. in an open saucepan, rats had a R.Q. of 1·04—1·11 as compared with a R.Q. of 0·99—1·01 in rats fed on similar vegetables either unboiled or autoclaved for 4 hr. at 2 atm. V. J. W.

(xix) METABOLISM, GENERAL AND SPECIAL.

Protein metabolism. XIII. Metabolism and inversion of *d*(+)-leucine. S. Ratner, R. Schoenheimer, and D. Rittenberg. **XIV. Interaction of dietary glycine and body-proteins of rats.** S. Ratner, D. Rittenberg, A. S. Keston, and R. Schoenheimer (J. Biol. Chem., 1940, **134**, 653—663, 665—676; cf. A., 1940, III, 237).—XIII. Repetition of the procedure previously described (*ibid.*, 148) but with the *d*(+)- replacing the *l*(−)-form of the D- and ^{15}N-containing amino-acid shows that all the organs of adult rats take up ^{15}N but that the proportion introduced into the tissue-proteins is only 34%, the proportion excreted in the urine being correspondingly great. Since the amino-acids of the proteins contain ^{15}N, *d*(+)-leucine yields N for transfer of NH_2 amongst amino-acids and since leucine from liver- and other body-proteins contains D, inversion of *d*(+)-leucine occurs, its C chain being used for production of *l*(−)-leucine. Probably, as the D content of the inverted acid is high and the ^{15}N content low, the first stage of the inversion is complete deamination. In the second stage, N from other amino-acids is used for amination, a small proportion of ^{15}N being re-introduced.

XIV. Determination of the ^{15}N contents of the organs and excreta of adult rats on a diet to which glycine containing ^{15}N is added shows that approx. 40% of the ^{15}N is excreted in the urine, approx. 11% is taken up by the non-protein nitrogenous matter, and the remainder by the proteins. These take up glycine-N to the same extent as they take up *l*(−)-leucine-N. Amongst amino-acids isolated by hydrolysis of the proteins, glycine has the highest ^{15}N content but other amino-acids also contain appreciable proportions. Glycine resembles other amino-acids in accepting N from and transferring N to other amino-acids. W. McC.

Synthesis of glycocyamine (guanidinoacetic acid) in rat kidney and mechanism of creatine synthesis *in vivo*. H. Borsook and J. W. Dubnoff (Science, 1940, **91**, 551—552).—Rat kidney slices and macerated kidney tissue in PO_4''' buffer at p_H 7·4 form glycocyamine from arginine and glycine rapidly. Surviving rat liver slices do not show this ability. Glycocyamine is not methylated in the kidney but in the liver; thus both kidney and liver participate in the formation of creatine.

E. R. S.

Metabolism of the racoon. R. Neseni (Z. Tierernähr. Futtermittelk., 1939, **3**, 125—146).—The digestibility of nutrients by racoons is lowered by addition of cereals to the ration, the effect being less marked if the cereals are cooked. The digestibility of cereals is in the (descending) order, rice, maize, wheat, oats, barley. Tripe is inferior to beef. The amounts of urine voided and of Cl′ eliminated are least with an all-flesh diet, and increase with a mixed diet. The total urinary S and SO_4'' with a meat is greater than with a mixed diet. Of the total SO_4'' approx. 5% is ethereal SO_4. Neutral S constitutes about 15% of the total S. Elimination of Ca and Mg is small, the ratio being 7 : 1 with a raw mixed diet and 2 : 1 with a ration of cooked cereals. The total N is higher when raw than when cooked food is given. The nutrient requirement of growing animals averages 6—8 g. of crude protein and 100 cal. per kg.

A. G. P.

Effect of choline on blood- and liver-lipins of the dog with ligated pancreatic ducts. C. Entenman, M. L. Montgomery, and I. L. Chaikoff (J. Biol. Chem., 1940, **135**, 329—335; cf. A., 1937, III, 468).—Choline chloride (2 g. daily) prevents excessive fat deposition following ligation of the pancreatic duct in dogs. It does not prevent loss of wt., but reduces post-operative changes in blood-lipins. R. L. E.

Effect of supplementary cystine and methionine on production of fatty livers by rats on high-fat diets containing casein or edestin. H. F. Tucker, C. R. Treadwell, and H. C. Eckstein (J. Biol. Chem., 1940, **135**, 85—90).—The variations in the lipin content of the livers of rats fed on a low-protein (5% casein or edestin) and high-fat (40% lard) diet can be explained on the basis of the cystine and methionine contents. P. G. M.

Phospholipins in rabbit plasma after fatty meals. C. Artom and J. A. Freeman (J. Biol. Chem., 1940, **135**, 59—64).—Higher vals. for lecithin and lower vals. for kephalin are mostly found after feeding olive oil. The findings support the hypothesis that lecithin is the only phospholipin concerned in the transport of absorbed fatty acids. P. G. M.

Lipin metabolism in brain and other tissues of the rat. W. M. Sperry, H. Waelsch, and V. A. Stoyanoff (J. Biol. Chem., 1940, **135**, 281—290).—After administration of D-containing fat, the largest concns. of labelled fatty acids were found in the liver and intestine but only traces in the brain. A large but variable proportion (in small concn.) is also found in the depot (carcase) fatty acids. H. G. R.

Synthesis and deposition of lipins in brain and other tissues with deuterium as indicator. H. Waelsch, W. M. Sperry, and V. A. Stoyanoff (J. Biol. Chem., 1940, **135**, 291—296).—Brain unsaponifiable fraction (rat) is replaced at a very slow rate, whereas one fifth of the brain fatty acids may be replaced in a week. The metabolism of unsaponifiable substances plays a less dominant rôle in the liver than does fatty acid metabolism and the intestine is an active participant in endogenous lipin metabolism.

H. G. R.

Lipin metabolism in brain during myelination. H. Waelsch, W. M. Sperry, and V. A. Stoyanoff (J. Biol. Chem., 1940, **135**, 297—302).—Unsaponifiable and fatty acid fractions of rat brain are deposited at a rapid rate from the 15th to 19th day of extrauterine life, the rate then decreasing. No marked differences are observed between the two fractions and the lipins are synthesised in the brain itself. The relationships between the rates in the liver, intestine, and carcase are similar to those in adult rats although D uptake is considerably higher in the young. H. G. R.

Synthesis of phosphopyruvic acid on oxidation of lactic acid. D. L. Ferdman and S. F. Epstein (Science, 1940, **91**, 365—366).—The synthesis of phosphopyruvic acid in minced cat's muscle tissue after addition of Na lactate with a plentiful supply of O_2 is described. The inorg. PO_4''' diminishes during the synthesis. L. S. T.

Phosphorus changes during absorption of oil and glucose. R. Reiser (J. Biol. Chem., 1940, **135**, 303—311).—Ingestion of olive oil (man) is followed by a decrease in serum- and urinary inorg. PO_4''', whereas glucose causes a decrease in serum- and an increase in urinary P. Ingestion of cottonseed oil (pig) is followed by an increase in inorg. and ester-P of duodenal mucosa and ester-P of liver and kidney, but no change in inorg. P of liver and kidney. Absorption of glucose is accompanied by an increase in dry substance of duodenal mucosa and of ester-P of duodenal mucosa and kidney, no change in liver-P or inorg. P of kidney, and a decrease in inorg. P of duodenal mucosa. H. G. R.

Nitrogen, calcium, and phosphorus balances of adolescent boys. P. C. Hsu and W. H. Adolph (Chinese J. Physiol., 1940, **15**, 317—325).—Diets consisting chiefly of rice, white flour, vegetables, and a little meat, to which milk powder, soya-bean "milk," or bone ash were added, were fed to 10 boys, aged 14—16 years. Effects on P and N balances were doubtful; cow's milk or 3 g. of bone ash per day increased Ca retention. N. H.

Mixed radioactive indicators in physiological experiments. O. Blüh (Nature, 1940, **146**, 233—234).—Experimental methods of testing the objections raised against the use of these indicators in physiology are suggested. L. S. T.

Oxidation of phenylpropionic acid and its higher homologues in isolated dog's kidney. I. Snapper and A. Grünbaum (Chinese J. Physiol., 1940, **15**, 301—307).—The acids and glycine were perfused through the kidney and the products, conjugated with glycine, extracted from the blood and urine by alcohol. In the dog, ω-phenyl-propionic and -valeric acid are converted into cinnamic acid and -butyric and -hexoic acid into phenylacetic acid. The human kidney converts phenylpropionic into benzoic acid. N. H.

(xx) PHARMACOLOGY AND TOXICOLOGY.

Resistance to sulphanilyl derivatives *in vitro* and *in vivo*. J. S. Harris and H. I. Kohn (Science, 1940, **92**, 11).—Bacteria develop a resistance to sulphanilyl derivatives, partly temporary and partly "permanent" (appearing in subcultures), when grown in broth. This occurs *in vivo* in pneumococcus against sulphapyridine and in *Staph. aureus* against sulphamethylthiazole. There are two types of resistance, that in which the resistance established by one drug is effective against related drugs (*E. coli* and *S. aureus*) and that in which it is not effective (*Hæmophilus parainfluenzæ*). E. R. S.

Effects on monkeys of sulphapyridine in doses comparable with those used for infants. J. A. Toomey, H. S. Reichle, and W. S. Takacs (J. Pediat., 1940, **16**, 179—190).—In a dosage of 1·5 g. per kg. sulphapyridine produces clinical and pathological changes in the urinary tracts of *M. mulatta* monkeys. C. J. C. B.

Action of sulphanilamide derivatives in streptococcal and pneumococcal infections in mice. K. Ganapathi (Indian J. Med. Res., 1940, **27**, 971—978).—The results of testing 17 compounds related to sulphanilamide in hæmolytic streptococcal and pneumococcal (type I) infections in mice are given. 3 compounds were found to be less active than sulphanilamide for the former, but far less toxic. 2-Sulphanilamidothiazole showed striking activity against both cocci, comparable with that of 2-sulphanilamidopyridine. H. B. C.

Sulphanilamide compounds.—See A., 1940, II, 327, 330.

Should hydroxytyramine be classed as a true sympathomimetic amine? Raymond-Hamet (Compt. rend. Soc. Biol., 1940, **133**, 570—572).—The vasoconstrictor power of hydroxytyramine is as great at high concns. (1%) as at low concns. (0·01%). H. G. R.

Pharmacological action of quaternary alkaloids of *Phœanthus ebrachteolatus* (Presl.), Merrill (kalimatas). F. Garcia (Philippine J. Sci., 1940, **71**, 361—372).—Experiments on dog, cat, mouse, and frog show that aq. alcoholic extract of the powdered bark of the tree diminishes blood pressure, the action being more prolonged than that of nitroglycerol or acetylcholine. The extract, which acts in the same way as do the quaternary alkaloids left after removal of the *tert.* alkaloids from alkaline medium with ether, diminishes intestinal vol. and reduces the contracting power of tracheal muscle and uterus. It counteracts the stimulating effect of pilocarpine and Ba on the intestine and tracheal muscle and of pitocin and histamine on the uterus. The min. lethal dose of the standard extract is 0·5 c.c. per kg. for frogs and 1 c.c. per kg. for mammals. W. McC.

Mode of action of veritol. H. Kwiatkowski (J. Pharm. Exp. Ther., 1940, **69**, 198—206; cf. A., 1939, III, 85).—Effects on human blood pressure, perfused rabbit's ear, frog's heart, and cat's nictitating membrane show that veritol potentiates the action of adrenaline and of adrenergic nerves. These effects, resembling those of ephedrine, are attributed mainly to the inhibition of amine oxidase. E. M. S.

Purified digitalis glucosides. I. Potency and dosage of "Digitaline Nativelle" by oral ad-

ministration in man. H. Gold, N. T. Kwit, and McK. Cattell (J. Pharm. Exp. Ther., 1940, **69**, 177—197; cf. A., 1940, III, 62).—Digitalis leaf and "Digitaline Nativelle" were assayed in man by changes in the *RT–T* wave in the e.c.g. in 14 patients with normal sinus rhythm, and by changes in ventricular rate in 16 patients with auricular fibrillation. 6—12 cat units of digitalis leaf were required to produce the equiv. oral effect of 1 cat unit of "Digitaline Nativelle." The results of animal bio-assay methods for purified glucosides are not transferable to man. E. M. S.

Anæsthesia. I. Anæsthetic action of *cyclo*propyl methyl ether. J. C. Krantz, jun., C. J. Carr, S. E. Forman, and W. E. Evans, jun. (J. Pharm. Exp. Ther., 1940, **69**, 207—220).—The compound ("cyprome ether") is a colourless liquid, d_4^{25} 0·786, b.p. range 43·5—44·0°. Its anæsthetic potency, in experimental animals, was greater than that of ether, but less than that of $CHCl_3$. There was no impairment of liver function in monkeys, and no pathological changes in the liver and kidney of the rat. Toxicity to frog's heart was equiv. to that of ether. The blood pressure remained high and the pulse good in dogs under deep surgical anæsthesia. E. M. S.

Anæsthetic activity of optical antipodes. I. *sec.*-Butyl alcohols. T. C. Butler and H. L. Dickison. **II. Arabinochloraloses.** T. C. Butler (J. Pharm. Exp. Ther., 1940, **69**, 225—228, 229—235).—I. No difference was shown in the duration of anæsthesia produced in mice by equiv. doses of *d*- and *l-sec.*-butyl alcohols.

II. The more sol. pair of the 4 isomeric arabinochloraloses differ from each other in their anæsthetic activities in mice. The compound formed from *l*-arabinose is more active that the *d*-compound. The less sol. pair differ slightly. The significance of this unequal activity in relation to theories of narcosis is discussed. E. M. S.

Metabolic fate of 1-methyl-5-allyl-5-*iso*propylbarbituric acid (narconumal). T. C. Butler and M. T. Bush (J. Pharm. Exp. Ther., 1940, **69**, 236—239; cf. A., 1940, III, 329).—In the mouse, the narcotic effect of narconumal decreases sooner than that of alurate in equiv. dosage, suggesting that the former compound is not inactivated by demethylation to the latter. In the dog, narconumal is excreted up to 2% in the form of alurate in the urine; none is excreted unchanged. E. M. S.

Relationship of histamine to anaphylaxis in the rabbit. C. A. Dragstedt, M. A. de Arellano, and A. H. Lawton (Science, 1940, **91**, 617—618).—After antigen was added to the blood in a rabbit's lung prep., the leucocyte count was reduced 50% and the total blood-histamine was markedly reduced. Using a saline perfusion in the lung prep. small quantities of histamine were detected after anaphylaxis. Katz's results (A., 1940, III, 628) are confirmed. It is concluded that histamine plays a significant rôle in anaphylaxis in the rabbit. E. R. S.

Accidental perivascular injection of thorotrast. S. E. Ziffren (Radiology, 1940, **34**, 171—175).—Dense scar tissue containing numerous large phagocytes filled with highly refractile brownish granules was found 33 and 20 months after the accident. E. M. J.

Absorption, distribution, and elimination of alcohol. VI. Principles governing concentration of alcohol in blood and concentration causing respiratory failure. H. W. Haggard, L. A. Greenberg, and N. Rakieten. **VII. Influence of inhalation of oxygen and carbon dioxide and certain drugs on concentration of alcohol in blood causing respiratory failure.** H. W. Haggard, L. A. Greenberg, N. Rakieten, and L. H. Cohen (J. Pharm. Exp. Ther., 1940, **69**, 252—265, 266—271; cf. A., 1939, III, 933).—VI. The principles are presented with mathematical analyses and experimental demonstrations. When respiratory failure occurs, the tension of alcohol in the respiratory centre is lower than that in arterial blood and higher than that in blood from the jugular vein. By using a method for slow administration of alcohol, these 3 tensions can be brought close. The average concn. at respiratory failure in fasting rats was 9·3 mg. of alcohol per c.c. of blood.

VII. The concn. of alcohol in the blood causing respiratory failure in rats was unaffected by inhalation of O_2, or by non-toxic doses of caffeine, dinitrophenol, strychnine, amphetamine, NaBr, amytal, acetanilide, phenacetin, antipyrine, and aspirin. Inhalation of CO_2 increased the concn. and antagonised the depression of the respiratory centre. Morphine caused a marked decrease in concn. E. M. S.

Effects of chronic alcohol poisoning in rabbits. C. L. Connor (Arch. Path., 1940, **30**, 165—179).—Groups of rabbits were fed on a casein mixture or on a soya bean diet. 20% alcohol was given by stomach tube to the treated animals beginning with 20—30 c.c. daily and increasing to 100 c.c. The liver showed (1) fatty infiltration, (2) atrophy, (3) cellular degeneration of varying degrees, and (4) fibrosis. (5 photomicrographs.) C. J. C. B.

Effect of sodium salt of 1 : 5-diphenylpyrazoline-3-carboxylic acid on body temperature of normal albino rats at different environmental temperatures. F. H. Schultz and R. M. Hill (J. Pharm. Exp. Ther., 1940, **69**, 221—224).—Under suitable conditions, intraperitoneal injection (225 mg. per kg.) of the compound caused a fall of rectal temp. The fall was greatest in cold and least (or absent) in hot environments. E. M. S.

Effects of oral administration of argemone oil. C. L. Pasnicha, S. Lal, and K. Banerjee (Indian J. Med. Res., 1940, **27**, 947—951).—The toxicity of argemone oil to animals is reduced to that of mustard, olive, or liquid paraffin oils by heating to fuming (240° for 15 min.). If these results apply to man, heating the oil would control the outbreaks of epidemic dropsy. Argemone oil by mouth to guinea-pigs or mice causes extensive degenerative changes in liver and kidneys. H. B. C.

Reaction between *Vipera russellii* venom and its antivenene. B. N. Ghosh and N. L. Kundu (Indian J. Med. Res., 1940, **27**, 1121—1127).—The neutralisation curve of *V. russellii* venom by its anti-

venene behaves as if one antigen particle occupies one active point on the surface of an antibody particle. When a given quantity of venom is added to an equiv. quantity of antivenene in 2 instalments at an interval of 30 min., the resulting mixture develops slight toxicity. Experiments indicate the possibility of titration *in vitro* of antivenene against venom by comparison of turbidities developed in venom–antivenene mixtures. H. B. C.

Elkonite, a colloidal clay.—See A., 1940, I, 397.

Size of samples necessary for establishing significance of difference in responses to two different treatments. S. Swaroop (Indian J. Med. Res., 1940, **27**, 1149—1172).—Statistics are given for this for two drugs, calc. from Fisher's formula. H. B. C.

(xxi) PHYSIOLOGY OF WORK AND INDUSTRIAL HYGIENE.

Heat loss from human body. E. F. Du Bois (Bull. N.Y. Acad. Med., 1939, **15**, 143—173).

Heat regulation of small laboratory animals at various environmental temperatures. C. P. Herrington (Amer. J. Physiol., 1940, **129**, 123—139).—Metabolic study has identified a region of thermal neutrality at 30—31° (guinea-pig), 28—29° (rat), and 30—33° (mouse). Metabolisms of the order of 590, 680, 740 cal. per sq. m. per 24 hr., in the same species order, are typical of these temp. ranges. Above this crit. area metabolism under hot conditions is very variable. In spite of large increases in metabolism, body temp. falls with decreasing environmental temp., leading to failure of temp. regulation when the physiological limit of storage is reached. M. W. G.

Body build and oxygen metabolism at rest and during exercise. C. C. Seltzer (Amer. J. Physiol., 1940, **129**, 1—13).—Individuals with more linear body builds rather than lateral and those with relatively stouter extremities rather than longer have a higher O_2 consumption per unit of body-wt. and hence higher metabolic rates. Lateral body build individuals are more economical in their O_2 consumption at rest than the linear type. In exhausting work on the treadmill the linear type shows greater capacity per kg. body-wt. for supplying O_2 to the tissues. There is a racial variation in O_2 metabolism as expressed by the cranio-facial indices. M. W. G.

Rôle of ventilating systems in the transmission of bacteria. J. M. Dallavalle and A. Hollaender (U.S. Publ. Health Repts., 1940, **55**, 1268—1272).—Present-day air-conditioning systems often re-circulate as much as 90% of air once cooled. Air from an infected space may thus be conveyed to a common plenum and redistributed to non-infected areas. Tests made with two different ventilating systems are discussed. Bacteria (*B. subtilis* spores) were introduced at various points in each system and samples taken in representative rooms. The data indicate that bacteria may be spread by a ventilating system. C. G. W.

Radioactive air inhalation as a health hazard. R. D. Evans and C. Goodman (Physical Rev., 1938, [ii], **54**, 866).—Rn inhalation may lead to lung cancer, even 10—15 years after termination of the exposure. The Rn and thoron contents of the air in industrial establishments using radioactive substances should be reduced. L. S. T.

Lead absorption and intoxication in man unassociated with occupations or industrial hazards. G. H. Hansmann and M. C. Perry (Arch. Path., 1940, **30**, 226—239).—Examinations of tissues for Pb absorption were made on 48 bodies, the ages of which ranged from 11 weeks' gestation to 93 years of age. The amount of Pb in the ribs varied from 23 to 0 mg. per 100 g. and in the liver from 21 to 0 mg. per 100 g. There was no relationship between the amount of Pb absorbed and the age except that those subjects free from Pb were fœtuses or children under 12 years of age. A mother who has absorbed Pb will excrete increasing amounts of Pb during gestation, the excretion of which parallels the skeletal growth of the fœtus. Analysis of entire fœtuses (11—24 weeks' gestation) revealed Pb in 62·5% of them. The amount in 25% of these bodies may be considered hazardous. Of fœtuses from 4 months to term, 80% had Pb in the rib or the liver or in both organs. All subjects over 12 years of age or 90% of those between birth and 93 years of age revealed evidence of Pb absorption. C. J. C. B.

Accidental lead poisoning due to inhalation of fumes produced in [oxy-acetylene] cutting of a metal bridge. G. Batta, J. Firket, and E. Leclerc (Chim. et Ind., 1940, **43**, 637—638).—Several operatives engaged in demolishing an Fe bridge painted with a Pb_3O_4 primer developed symptoms of Pb poisoning; although the work was done in the open air a Pb content of 1 g. per cu. m. of air was found in the vicinity of the work and the dust deposited on surrounding objects contained 47% of Pb. The use of respirators is considered essential for this type of work. A. R. P.

Occupational leucoderma. L. Schwartz, E. A. Oliver, and L. H. Warren (U.S. Publ. Health Repts., 1940, **55**, 1111—1130).—An outbreak of leucoderma among workers in a tannery was investigated. 50% of those wearing a heavy acid-cured glove were affected. Many workers wearing the same make of glove in other tanneries and in other industries were similarly affected. By patch testing with the various chemicals in the glove it was found that the antioxidant (said to be quinol monobenzyl ether containing less than 1% impurity of unchanged quinol) was the cause of the leucoderma. The impurity of quinol was not a factor in causing the leucoderma. Repigmentation of the leucodermic areas followed the withdrawal of the antioxidant from the rubber glove. The theories of the action of antioxidants in rubber are discussed. C. G. W.

Clothing for protection against occupational skin irritants. L. Schwartz, L. H. Warren, and F. H. Goldman (U.S. Publ. Health Repts., 1940, **55**, 1158—1163).—Resin films and fabrics coated with them were tested for suitability for clothing for protection against occupational skin irritants. Of the

materials tested, Pliofilm, Vinylite, and Koroseal were found most suitable. Designs for such protective clothing are outlined. C. G. W.

(xxii) RADIATIONS.

New therapy with high-speed electrons. R. Schindler (Radiology, 1940, **34**, 223—234).—A review. E. M. J.

Physical factors influencing difference between 200 and 500 kv. radiation. K. E. Corrigan (Radiology, 1940, **34**, 8—12).—The contributions of the primary beam and forward scatter to the depth dose at 10 cm. are as 1 : 7 at 200 kv. and nearly equal at 500 kv. with a focus–skin distance of 60 cm. E. M. J.

Differences between 200 kv. and supervoltage roentgen therapy. R. Dresser, J. C. Rude, and B. J. Cosman (Radiology, 1940, **34**, 13—16).—Less skin reaction, a larger depth dose, a greater contribution of the primary beam towards the latter, relative independence of the size of the field, and a diminished general reaction were the advantages of working at 1000 kv. with a half-val. layer of 10·5 mm. of Cu. E. M. J.

Biological measurement of high-voltage radiations. C. Packard (Radiology, 1940, **34**, 17—23).—The biological effect of *X*-rays as measured by the survival rate of *Drosophila* eggs fell to 83% at 300 kv. and 80% at 900 kv. of that at 120 or 200 kv. E. M. J.

Spanish standard for absolute determination of international roentgen unit. H. T. Plasencia (Radiology, 1940, **34**, 82—94).—Two primary standard ionisation chambers of different models, one with parallel-plate electrodes, the other the barrel chamber type, are used in connexion with a Piccard electrometer one of the spheres of which has been replaced by a piezo-electric quartz sheet. The second sphere is under the influence of a Ra standard at an adjustable distance. E. M. J.

Yeast growth: possible test organism for *X*-radiation. O. W. Richards (Radiology, 1940, **34**, 317—326).—Pure strains of *Saccharomyces cerevisiæ* were irradiated with 9500—28,500 r. at 70 kv. and 200—38,000 r. at 200 kv. while living in culture media. Temporary retardation of the usual rate of increase of nos. of cells accompanied by increased optical density with doses up to 15,000 r. and decreased density with greater dosage as measured nephelometrically were observed. At the end of the growth cycles the irradiated specimens again approached the controls in all respects. E. M. J.

Economic features of *X*-ray protection. L. S. Taylor (Radiology, 1940, **34**, 425—437).—A review. E. M. J.

(xxiii) PHYSICAL AND COLLOIDAL CHEMISTRY.

Summation of electrical potential of living membranes (frog skin). Model of the electrical organ of fishes. T. C. Barnes (J. Gen. Physiol., 1940, **23**, 729—732).—Frog skins arranged in series in tubes of Ringer's solution show summation of e.m.f. which helps to explain the nature of electrical fields in the organism as a whole and in the electrical organ of fishes. D. M. N.

Separation of potassium isotopes in *Valonia* and *Nitella*. A. G. Jacques (J. Gen. Physiol., 1940, **23**, 741—742).—The ratio of ^{39}K to ^{41}K appears to be lower in the sap of *Valonia* and *Nitella* (13·85) than in the surrounding sea-water (14·20). D. M. N.

Action curves with single peaks in *Nitella* in relation to movement of potassium. W. J. V. Osterhout and S. E. Hill (J. Gen. Physiol., 1940, **23**, 743—748).—In *Nitella*, the action curve has two peaks, apparently because both inner and outer protoplasmic surfaces are sensitive to $K^{\cdot}$. Leaching in distilled water makes the outer surface insensitive, and the action curve then has only one peak. D. M. N.

Electrical conductance of suspensions of ellipsoids and its relation to the study of avian erythrocytes. S. Velick and M. Gorin (J. Gen. Physiol., 1940, **23**, 753—771).—The theory of electrical conductance of colloidal suspensions has been extended to cover the case of ellipsoids with three axes different, and the results have been applied to suspensions of ellipsoidal erythrocytes of birds. Fluctuations in R of erythrocyte suspensions after stirring are due to streaming orientation of the cells. D. M. N.

Proteins as chemical substances and as biological components. E. J. Cohn (Bull. N.Y. Acad. Med., 1939, **15**, 639—667).

(xxiv) ENZYMES.

Sulphanilamide as a specific inhibitor of carbonic anhydrase. T. Mann and D. Keilin (Nature, 1940, **146**, 164—165).—Sulphanilamide acts as a powerful inhibitor of the catalytic activity of carbonic anhydrase in blood, in gastric mucosa, and in pure enzyme preps.; a marked effect is exhibited even at a concn. of 2×10^{-6} g.-mol. The amide group of sulphanilamide is not responsible for this inhibition; its loss as in benzenesulphonamide, its acetylation as in acetamidobenzenesulphonamide, or its shift to *o*- or *m*-positions does not affect the properties of these compounds as inhibitors of the anhydrase. Examination of the activities of numerous other related substances shows that the $SO_2{\cdot}NH_2$ appears to be directly concerned with the inhibitory effect, since replacement of one or both H in the amido-group results in a complete loss of inhibitory power. The enzyme appears to be a sensitive biological test for detecting a few μg. of an unsubstituted sulphonamide compound. $NH_2{\cdot}SO_3H$ and $SO_2(NH_2)_2$ inhibit the activity of carbonic anhydrase to a much smaller extent than benzenesulphonamide or sulphanilamide. The $SO_2{\cdot}NH_2$ appears to react directly with the Zn-containing prosthetic group of the enzyme. Sulphonamide compounds in concns. as high as 10^{-2} g.-mol. have little or no effect on catalase from liver, peroxidase, uricase, urease, and carboxylase, and cytochrome, polyphenol, and xanthine oxidases. L. S. T.

Tyrosinase. II. G. G. PARKINSON, jun., and J. M. NELSON (J. Amer. Chem. Soc., 1940, **62**, 1693—1697; cf. A., 1939, III, 98).—Preferential adsorption of the cresolase activity of tyrosinase from *Psalliota campestris* is used to overcome loss during purification and to obtain very active preps. About a third of 40 such preps. have approx. 175 cresolase units per μg. of Cu and this is probably a significant ratio. When the catecholase activity of these preps. is determined by the inactivation method or by the direct method (using catechol without quinol), an uptake of 150 c.c. of O_2 corresponds with inactivation of catecholase equiv. to approx. 0·003 μg. of Cu, and these methods lead to proportionality of catecholase activity with both Cu content and cresolase activity. Further, the ratio of the two activities of the active preps. equals that of the fresh aq. extract. Hence tyrosinase is a single enzyme of dual function. R. S. C.

Tropine esterase. D. GLICK (J. Biol. Chem., 1940, **134**, 617—625; cf. A., 1937, III, 220).—Determination of acid liberated at p_H 6·5—9·0 and 20—45° during hydrolysis of atropine sulphate (concn. 0·005—0·25%) by 1—5% of rabbit serum shows that the process is a reaction of the order 0, the optimum p_H and temp. being 8·1—8·4 and 38° respectively. The affinity between enzyme and substrate is unusually great. Excess of substrate produces no inhibition. The temp. coeff. of the reaction (ratio of activity at a given temp. to that 10° lower) is 2·00 for the range 25—35° and 1·9 for the range 28—38° and the temp. const. is 12,000 cal. W. McC.

Polariscopic determination of proteolytic activity. Q. LANDIS (Cereal Chem., 1940, **17**, 468—472).—A method for measuring the concn. of proteolytic enzymes by the reduction in [α] of aq. gelatin at temp. below 25° is described. T. M.

Influence of thiol compounds on the activity of bone-phosphatase *in vitro*. H. L. WILLIAMS and E. M. WATSON (J. Biol. Chem., 1940, **135**, 337—338).—Dialysed preps. of bone-phosphatase are activated by low, but inhibited by high, concns. of cysteine. Thioglycollic acid and glycine inhibit the enzyme, which is reactivated by iodoacetate. Ethyl mercaptan is also inhibitory. R. L. E.

Reversible formation of starch from glucose 1-phosphate catalysed by potato phosphorylase. C. S. HANES (Proc. Roy. Soc., 1940, **B**, **129**, 174—208; cf. A., 1940, III, 448).—The prep. from pressed potato juice of highly active phosphorylase which exhibits no amylase activity is described. In the reversible reaction, the ratio inorg. PO_4''' : glucose 1-phosphate is practically unaffected by wide variations in the concn. of reactants or enzyme. The equilibrium depends on p_H and the effect is due to the dissociation of the inorg. and org. PO_4''', the bivalent ions alone determining the equilibrium. The ratio $HPO_4'' : C_6H_{11}O_5{\cdot}O{\cdot}PO_3''$ is approx. 2·2 over the p_H range 5—7. The polysaccharide formed from glucose 1-phosphate by the purified enzyme closely resembles the amylo-amylose fraction of natural potato starch. A large-scale prep. of K glucose 1-phosphate from starch is described and the mechanism of the reversible reaction and its bearing on carbohydrate metabolism in the plant are discussed. J. N. A.

Synthesis of *d*(+)-α-glycerophosphoric acid and the action of phosphatases on synthetic *d*(+)-, *l*(−)-, and *dl*-α-glycerophosphoric acids. —See A., 1940, II, 322.

Preparation of co-enzyme I from yeast. S. WILLIAMSON and D. E. GREEN (J. Biol. Chem., 1940, **135**, 345—346).—A rapid method, giving a product about 65% pure, is described. R. L. E.

(xxv) MICROBIOLOGICAL AND IMMUNOLOGICAL CHEMISTRY. ALLERGY.

Effect of bios on nitrogen metabolism of yeast. I. Ammonia and urea. A. S. SCHULTZ, L. ATKIN, and C. N. FREY (J. Biol. Chem., 1940, **135**, 267—271).—Growth of *S. cerevisiæ* with urea- or NH_3-N depends on the bios supplement and in the former case it requires more bios IIB and less β-alanine, the presence of NH_3-N appearing to decrease the availability of the latter. H. G. R.

New bios factor in liver extract. B. ALEXANDER and Y. SUBBAROW (J. Biol. Chem., 1940, **135**, 341—342).—An accessory yeast growth factor from liver, distinct from all known factors, is reported. R. L. E.

Amino-acid analogues of pantothenic acid.—See A., 1940, II, 325.

Fermentation of cassava starch by newly discovered bacteria. T. BABA (Bull. Sch. Agric. Forestry Taihoku, 1940, No. 1, 59—93).—Two races of bacteria with unusual powers of fermenting starch have been obtained from products of the technical prep. of cassava starch. The first, described as *Granulobacter saccharobutyricum*, var. *tauranense*, shows optimum fermentation at p_H 5·0—6·5 and 35—40°. The second, *Bacterium cassavarum*, an aërobic non-sporing rod-like variety, thrives vigorously in a solution containing peptone, Liebig's extract of meat, starch 1—5, and $CaCO_3$ 2·5%. After 40 hr. at 37° a 7% starch paste is almost completely hydrolysed without evolution of gas. The optimal p_H is 6·5—7·5. *B. cassavarum* does not liquefy gelatin; it forms an orange-yellow pigment. H. W.

Effect of sodium chloride and temperature on endogenous respiration of *B. cereus*. M. INGRAM (J. Gen. Physiol., 1940, **23**, 773—780).—The rate of O_2 consumption of suspensions of *B. cereus* was lowered by the presence of 0·2—1·8M-NaCl, but the temp. coeff. of respiration was unaltered. In the presence of lower concns. of NaCl, the rate of respiration and the temp. coeff. were increased. Small changes in temp. coeff. occurred when the p_H was changed between 6·0 and 7·5, the coeff. being the higher the greater was the rate of respiration. D. M. N.

Diphtheria prophylaxis. J. T. LEWIS (Brit. Med. J., 1940, I, 728—729).—Optimum dosage and technique in use of alum-pptd. toxoid are suggested. C. A. K.

Pertussis prophylaxis. C. SINGER-BROOKS (J. Amer. Med. Assoc., 1940, **114**, 1734—1740; cf. A., 1939, III, 429).—4 years' controlled studies of 796

children strongly indicate that considerable immunity was induced by *Hæmophilus pertussis* phase I vaccine. C. A. K.

Oxidations effected by plague bacillus. M. S. Rao (Indian J. Med. Res., 1940, **27**, 617—626).—The oxidation of 48 compounds (carbohydrates, amino-acids, and org. acids) by suspensions of strain 120/54 virulent of the plague bacillus was studied manometrically in air at 27° and 0·05M. substrate concn. Q_{O_2} decreased in the order carbohydrates, org. acids, amino-acids. A series of relative oxidation rates of the substrates oxidised is given. Glucose and lactate are the best sources of C, the amino-acids—serine, alanine, proline, cystine, glutamic acid, glycine, phenylalanine, tyrosine, and methionine—are available to the bacillus as sources. H. B. C.

Nutrition of plague bacillus: rôle of hæmatin and other compounds. M. S. Rao (Indian J. Med. Res., 1940, **27**, 833—845).—Hæmatin is highly active in reducing the lag in the growth of the bacillus in a chemically-defined amino-acid medium; cozymase, thiamin, and nicotinic acid show less marked activity. Hæmatin, thiamin, and nicotinic acid together have the greatest effect. These substances stimulate the O_2 uptake of the bacillus. Hæmatin does not stimulate oxidation of any substrates but increases the blank O_2 uptake; cozymase stimulates oxidation of glucose and alanine and blank O_2 uptake; thiamin and nicotinic acid stimulate glucose oxidation only. H. B. C.

Action of type-specific antibody on pulmonary lesion of experimental pneumococcal pneumonia. W. B. Wood, jun. (Science, 1940, **92**, 15—16).—Experimental lobar pneumonia was produced in 114 white rats, of which 38 untreated animals died within 5 days. The remaining 76 had injected into the femoral vein 6000 units of conc. antipneumococcal rabbit serum; although bacteræmia developed in many animals no deaths occurred. There was pronounced agglutination of pneumococci, particularly in the œdema zone. Phagocytosis by polymorphonuclear leucocytes was noted at 6 hr., and only a few organisms were found after 96 hr. The macrophage reaction became prominent in 4 days. It is concluded that type-sp. immune bodies contained in anti-pneumococcal rabbit serum, if injected intravenously in sufficient quantity, enter the pneumonic lesions of rats with experimental pneumococcal pneumonia. E. R. S.

Carbohydrate fermentation reactions of staphylococci. G. H. Chapman and M. H. Stiles (Amer. J. clin. Path., 1940, **10**, 380—386).—Most staphylococci, regardless of their *in vitro* reactions, ferment glucose, fructose, sucrose, glycerol, and maltose within 18 hr. and fail to ferment dextrin, cellobiose, salicin, inulin, *i*-inositol, dulcitol, *l*-arabinose, *l*-xylose, raffinose, rhamnose, starch, melibiose, adonitol, *d*-sorbitol, and melezitose within 5 days, when tested on the surface of a tryptose–beef extract agar with phenol-red indicator. Pathogenic strains as a group had greater fermenting power than the group of non-pathogenic strains. Lactose and *d*-galactose gave parallel results in 119 of 125 cultures but the reactions were not associated with the coagulating, chromogenic, hæmolytic, and crystal-violet agar properties of the cultures. Fermentation of *d*-mannose, *d*-mannitol, and trehalose was more closely associated with these *in vitro* properties, the degree of correlation increasing in that order. C. J. C. B.

Diminishing response of skin to frequently repeated reinfection with invasive bacteria. E. Duran-Reynals and E. Estrada (Science, 1940, **92**, 41—42).—*Streptococcus hæmolyticus*, *Staphylococcus aureus* (invasive), *E. coli*, and *S. anolium* (non-invasive bacteria) were injected in 4 or 5 small doses at intervals of a few hr. into different sites in rabbits. The first injection was sufficient to produce in 24 hr. a lesion 10—20 sq. cm.; subsequent injections were equal in amount. After 24 hr. the lesions produced by the later injections of invasive bacteria were progressively smaller and less severe, the last lesion being frequently 15 times smaller than the first. This phenomenon was absent in infections caused by the non-invasive types, and both types were killed by heat. *Streptococcus* filtrates gave inconclusive results, as did rattlesnake venom. E. R. S.

Vaccines in chronic arthritis. N. Sidel and M. I. Abrams (J. Amer. Med. Assoc., 1940, **118**, 1740—1742).—17 out of 25 cases of rheumatoid arthritis were improved by intravenous polyvalent streptococcus vaccine and 24 out of 33 cases were improved by subcutaneous saline injections, which also relieved 56 out of 64 cases of chronic osteo-arthritis. C. A. K.

Soluble substances obtained at low temperatures from bacteria of the typhoid, paratyphoid, enteritis, and Shiga group. Their toxic and antigenic properties. R. Haas (Z. Immunitätsforsch., 1940, **97**, 317—329).—The antigens were prepared by drying and grinding the bacteria at −65° to −70°. Only the Shiga antigen was highly toxic to mice; it could be neutralised by anti-exotoxin. No endotoxin could be isolated by Boivin's method. Immune sera against these antigens contain sp. *O*-antibodies as demonstrated by alcohol agglutination and pptn. with *O*-antigens (endotoxins). Unsp. results were obtained when these immune sera were pptd. with their antigen. G. W.

(A) **Preparation of purified tuberculin.** J. Vásárhelyi and B. Gözsy. (B) **Chromatographic adsorption of purified tuberculin.** B. Gözsy and J. Vásárhelyi (Z. Immunitätsforsch., 1939, **97**, 255—265, 265—272).—(A) Sauton medium is used. After incubation for 5 weeks the liquid is saturated with $(NH_4)_2SO_4$ and the ppt. taken up with isotonic NaCl solution. It is dialysed through Cellophane until free of $(NH_4)_2SO_4$. The solution is then pptd. with trichloroacetic acid and the ppt. dried in a vac. over $CaCl_2$ and with ether. The tuberculin is used after being dissolved in Jensen's buffer solution (p_H 7·38). It has no sensitising action and its potency equals that of the Danish standard prep.

(B) Adsorption on Al_2O_3 did not yield a purer product. G. W.

Concentration of tubercle bacilli from spinal fluid by means of chemical flocculation and lipin

solvents. J. H. Hanks and H. A. Feldman (J. Lab. clin. Med., 1940, **25**, 886—892).—A study of the bacteriological diagnosis of tuberculous meningitis by means of chemical flocculation and by lipin solvent methods showed that alum and $CHCl_3$ provided more effective concn. of the bacilli during 5 min. centrifuging than was obtained by direct centrifuging for one hr. The alum flocculation method is recommended for cultivation or guinea-pig inoculation.
C. J. C. B.

Relations between specific immunity, allergy, and anaphylaxis in tuberculosis. H. J. Corper, M. L. Cohn, and A. P. Damerow (Amer. J. clin. Path., 1940, **10**, 361—379).—Small amounts of filtrate (tuberculoprotein) obtained from the growth of tubercle bacilli on synthetic non-protein media sensitise and intoxicate anaphylactically normal guinea-pigs. Such filtrates will not sensitise to a positive skin (tuberculoprotein) reaction. Bacillary-sensitised or tuberculous animals do not respond to an injection of filtrate by an acute anaphylactic shock reaction but show a protracted allergic intoxication with fatal issue after 1—3 days except when the tuberculous involvement is very marked. Filtrate-sensitised guinea-pigs do not develop acute anaphylactic shock after the injection of washed tubercle bacilli whilst bacillary-sensitised and tuberculous allergic animals do. The filtrate sensitisation can be passively transferred from about 45% of the donors whilst the bacillary and tuberculous allergic principle are never passively transferable to normal recipients. Although tuberculo-anaphylaxis and allergy are thus to be considered 2 separate biological phenomena sp. tuberculosis immunity and sp. tuberculosis allergy also appear to disclose distinguishing differences. The skin (allergic) reaction may be entirely absent in guinea-pigs which still retain their sp. tuberculosis immunity, and vice versa. Desensitisation with filtrate (tuberculoprotein) to the skin (tuberculin) reaction exerts no influence on the sp. tuberculosis immunity.
C. J. C. B.

Tissue response of rabbits to lipoid components of typhoid bacilli. E. W. Dennis (Amer. J. Hyg., 1940, **32**, B, 1—17).—*Bact. typhosum*, strain Vi Ty2, yielded 6·11% of lipin of which 40·6% was phosphatide and 44·0% acetone-sol. fat. Two phosphatide fractions were obtained, both immunologically active against sp. antibacterial antiserum. Crude phosphatide and glyceride injected intrapleurally and intraperitoneally produce an initial transitory granulocyte response followed by an unusually early mononucleated cell response and phagocytosis of the granulocytes and oil. Finally capillarisation of the accumulated mass of cells to form inflammatory granulation tissue takes place. The lipoid fractions are non-toxic.
B. C. H.

Viruses and their part in disease. W. G. MacCallum (Science, 1940, **91**, 608—610).—A review.
E. R. S.

Use of chick embryo cultures of influenza virus in complement fixation tests. C. Nigg, J. H. Crowley, and D. E. Wilson (Science, 1940, **91**, 603—604).—A high concn. of influenza virus was obtained by inoculating chick embryo between the yolk sac and the chorio-allantoic membrane. 0·1 ml. of 10^{-4} and 10^{-5} dilutions of yolk sac tissues produced fatal infections in embryos and mice. The product was found to be as good a source of complement-fixing antigens for serological purposes as mouse lung preps. Embryos alone were devoid of complement-fixing activity. The advantages of the egg preps. are: (*a*) relatively clear solution obtainable, (*b*) one egg gives as good a yield as the lungs of 6 or 7 mice, (*c*) egg preps. can be used with ferret serum.
E. R. S.

Immunity to Lansing strain of poliomyelitis as revealed by protection test in white mice. V. H. Haas and C. Armstrong (U.S. Publ. Health Repts., 1940, **55**, 1061—1068).—The mouse protection test, using human sera and the Lansing strain of poliomyelitis virus adapted to mice, gives reliable results (69% of the human sera tested protected mice against this virus). The individual's experience with clinically recognised poliomyelitis, or lack of it, did not determine the presence or absence in his blood serum of protective antibodies against the virus employed. The % of sera giving protection increased with the age of the donors.
C. G. W.

Solubility of purified tobacco mosaic virus. H. S. Loring (J. Gen. Physiol., 1940, **23**, 719—728).—The variation in solubility in aq. $(NH_4)_2SO_4$ and the type of solubility curve obtained in presence of varying amounts of the solid phase show that the purified virus is not a homogeneous chemical substance. The fractions obtained have comparable sp. activities. Long contact with aq. $(NH_4)_2SO_4$ or 0·1M-PO_4''' buffer at p_H 7 results in decreased solubility. The variation in solubility depends on the length of time during which the plants have been inoculated and on the conditions under which they are grown. Virus preps. made from plants of different genera grown under the same conditions and inoculated at the same time behave like identical substances in solubility experiments.
D. M. N.

Inhibition of bacterial metabolism by synthetic detergents. B. E. Miller and Z. Baker (Science, 1940, **91**, 624—625).—The metabolism of 6 Gram-positive and 6 Gram-negative micro-organisms was studied in the presence of several types of detergents at p_H 7·3. Cationic detergents (quaternary NH_4 compounds and salts and Emulsol 606) inhibited metabolism at 1 : 3000, and at 1 : 30,000 most were effective. Gram-positive and -negative organisms were equally affected. Anionic detergents (org. sulphates, sulphonates, and a taurocholate) had little effect on metabolism at 1 : 30,000. Tergitol 7 inhibited the 6 Gram-positive organisms at 1 : 3000, others inhibited some of the positive organisms, but little effect was produced on the negative organisms. The effect of cationic types increases with p_H increase, that of anionic types decreases. A series of alkyl sulphates C_8—C_{18} showed a max. inhibitory effect on Gram-positive organisms at C_{12}—C_{14} (lauryl and myristyl). Damol, Emulsol 605 and 606 are only slightly toxic to mice intraperitoneally, and hardly if at all irritant to rabbit's eye at 1 : 500—1000. The lauryl ester of glycine hydrochloride (Emulsol 606) is least toxic.
E. R. S.

Fluctuation in resistance after immunisation with hetero-bacteria. S. Nukada and M. Okutani (Z. Immunitätsforsch., 1940, **97**, 120—126).—Urinary N of rabbits diminishes when immunisation with bacteria produces increased resistance to subsequent injection of heterologous strains. Decrease of resistance is associated with increase in urinary N. G. W.

"Terminal" agglutination in antileptospira serum. A. Bessemans, P. Wittebolle, and R. Devuyst (Z. Immunitätsforsch., 1939, **97**, 238—254).—In mixtures of *Leptospiræ* with their immune sera agglutination occurs in dilutions much greater than in those at which lysis ceases. This "terminal" agglutination is not due to the presence of normal serum (from the culture media) and occurs with formolised and non-formolised cultures. It is related to the euglobulin and pseudoglobulin fractions of the immune sera. G. W.

Serological antigen analysis of inoculation tumours. W. Oswald (Z. Immunitätsforsch., 1939, **97**, 219—237).—Complement-binding reactions were carried out with anti-carcinoma sera both in the native serum and after adsorption by mice and sheep erythrocytes. Although the heterogenetic antibodies are by far the more prevalent, species-sp. antibodies are present to a certain extent. A modification of the method of Schmidt and Lehmann-Facius is described for splitting up the antigen mixture present in carcinoma tissue into several fractions. G. W.

Mechanism of allergy. M. Walzer (Bull. N.Y. Acad. Med., 1940, **16**, 389—394).

Allergy in childhood. L. W. Hill (Bull. N.Y. Acad. Med., 1940, **16**, 395—403).

Allergy with tetanus toxoid. R. A. Cooke, S. Hampton, W. B. Sherman, and A. Stull (J. Amer. Med. Assoc., 1940, **114**, 1854—1855).—A case record and experiments on guinea-pigs show that allergic sensitisation can be produced to alum-pptd. tetanus toxoid. C. A. K.

Clinical desensitisation to wheat by use of acetylcholine derivative. E. F. Pearson (Ann. int. Med., 1940, **13**, 2241—2245).—In patients proved to be allergic to the ingestion of wheat, the original symptoms were reproduced by acetyl-β-methylcholine chloride (mecholyl). The drug was then administered daily for 20—60 days in increasing dosage according to the tolerance of the individual during a controlled symptom-free period. When wheat was re-added to the diet, the original symptoms did not recur and they remained well or greatly improved under observation for a year or longer. In 4 cases previous attempts to desensitise with wheat extract, and in 2 previous treatment with injections of histamine, had been unsuccessful. C. J. C. B.

Erythema neonatorum toxicum. H. Leichenger and S. M. Abelson (Arch. Pediat., 1940, **57**, 386—388).—10 cases are described. It is suggested that this is an allergic skin manifestation of a focal fungus infection, usually oral thrush. C. J. C. B.

(xxvi) PLANT PHYSIOLOGY.

Osmotic values of the leaf saps of certain South African high-veld grasses. C. Weinbrenn (S. African J. Sci., 1939, **36**, 265—269).—Data obtained by the method described previously (A., 1939, I, 1108) are recorded and discussed for *Hyparrhenia hirta*, *Tristachya hispida*, *Eragrostis* sp., and *Cynodon dactylon*. Curves expressing osmotic vals. between October and February are markedly similar, only *T. hispida* showing slight deviation from the normal trend. Max., but not min., vals. were reached by the four species on the same date. There is no direct relation between soil moisture content and the osmotic vals., but, with the exception of *T. hispida*, the max. osmotic val. coincided with the min. soil moisture content. There is no direct relationship between the % of sap expressed and the osmotic vals., and no abs. relationship between the osmotic val. and the % of moisture in the sap. L. S. T.

Structure of "ineffective" nodules and its influence on nitrogen fixation. H. K. Chen and H. G. Thornton (Proc. Roy. Soc., 1940, **B**, **129**, 208—229).—The anatomy and cytology of nodules produced on clover, peas, and soya beans by "effective" and "ineffective" strains of *Rhizobia* are determined. In clover, the mean vol. of active bacterial tissue is approx. 3 times as great in "effective" as in "ineffective" nodules; this is due to early arrest of growth of the latter. In all nodules, the bacterial tissue finally disintegrates but it remains normal for about 6 times as long in "effective" nodules. In peas, "effective" nodules are nearly twice as long as "ineffective" nodules and the tissue remains normal for approx. twice as long. In soya beans, the mean vol. of bacterial tissue is 4·75 times as great in "effective" as in "ineffective" nodules, and in the latter disintegration begins when the plants are 4 weeks old, at which time none has occurred in "effective" nodules. The differences in the amounts of N fixed by clover and soya beans inoculated with the two strains are due almost entirely to differences in vol. of the nodules and the period of duration of the active bacterial tissue. J. N. A.

Reduction of ferric oxalate by isolated chloroplasts. R. Hill and R. Scarisbrick (Proc. Roy. Soc., 1940, **B**, **129**, 238—255; cf. A., 1939, III, 731).—Isolated chloroplasts from *Stellaria media* show a progressive fall in activity which becomes nearly zero in 3—6 hr. when the activity is determined by oxyhæmoglobin in presence of K Fe^{III} oxalate or by the rate of reduction of methæmoglobin by $Fe^{\cdot\cdot}$ in presence of O_2. Chloroplasts easily lose their ability to reduce Fe^{III} oxalate in light, shaking a suspension for 6 min. causing almost complete loss of activity. Chloroplasts from *S. media* grown in different places show different rates of loss of activity. In reduction of methæmoglobin, Q_{O_2} increases with decrease of concn. of chloroplasts and increase of methæmoglobin concn. Increase of $Fe^{\cdot\cdot\cdot}$ in the Fe^{III} oxalate reaction does not produce regular increase of Q_{O_2}. In the reduction of methæmoglobin, the rate increases with increase of Fe at low concn., but with high concn. of Fe the activity of the chloroplasts

appears to be greatly reduced. The effect of varying light intensity on the Fe^{III} oxalate reaction is similar to the effect on photosynthesis. The reaction is inhibited by urethane and phenylurethane. It is concluded that the light reaction in photosynthesis is the formation of O_2 and not reduction of CO_2. J. N. A.

Pollen germination tests in cherries. T. Raptopoulos (J. Pomology, 1940, **18**, 61—67).—Germination in sucrose–agar of pollen of diploid exceeded that of tetraploid varieties. Triploid pollen seldom germinated. Max. germination of diploid varieties in general was obtained in lower concn. of sucrose than was that of tetraploids. Pollens may be classified according to their tolerance of wide or narrow ranges of sucrose concn. in germination tests. Relations between pollen grain size and viability are examined. A. G. P.

Effect of emanations from several species of fungi on respiration and colour development of citrus fruits. J. B. Biale (Science, 1940, **91**, 458—459).—Passage of the gaseous products from lemons inoculated with *Penicillium digitatum* over fresh lemons produces effects similar to those produced by ethylene. *P. italicum*, but not *Oospora* and *Alternaria*, has a slight effect. L. S. T.

Chlorophylls and photosynthesis of thermal algæ from Yellowstone National Park, California, and Nevada. O. L. Inman (J. Gen. Physiol., 1940, **23**, 661—666).—Myxophyceæ normally growing at 65° evolved O_2 on irradiation; photosynthesis continued at 20°. Chlorophyll-*a* and -*b* in these species are the normal compounds, but the ratio of -*a* to -*b* is greater than in most plants. With algæ from some of the calcareous regions, the ether solution of acetone-sol. material showed an unidentified absorption band at 548 mμ. D. M. N.

The developing cotton fibre. I. Relation of development of crude cotton fibre to other principal boll constituents. J. Compton and F. E. Haver, jun. (Contr. Boyce Thompson Inst., 1940, **11**, 105—118).—Apart from differences in rates of maturation and in moisture content, field- and greenhouse-grown cotton fibres showed essentially similar proportions of dry crude fibre, reducing sugars, and alcohol–benzene-sol. fats and waxes. During active fibre development the reducing sugar content diminishes as the total crude fibre increases. The proportion of fats and waxes remains substantially const. A. G. P.

Lamellate structure of cellulose membranes in cotton fibres. F. L. Barrows (Contr. Boyce Thompson Inst., 1940, **11**, 161—179).—Development of cellulose membranes in the epidermal hairs of the seed coat of *Gossypium hirsutum* is examined. The fibre contains cellulose units laid down in successive lamellæ as the thickness of the fibre increases. The lamellæ are uniform in thickness and probably consist of a single layer of cellulose units united by a colloidal cementing material. Fibres grown in continuous light or in daylight under greenhouse conditions show the same type of *X*-ray diffraction pattern with slight differences in orientation and amount of cellulose. A. G. P.

Adventitious shoots and roots induced by natural influences and synthetic growth-substances. P. W. Zimmerman and A. E. Hitchcock (Contr. Boyce Thompson Inst., 1940, **11**, 127—141).—The manner of production of adventitious roots and shoots in *Althea* cuttings indicate that potential meristemat is first stimulated into activity and then regulated by a chemical influence. Root-inducing substances, *e.g.*, naphthyl- and indolyl-acetic esters, prevent initiation of shoots and cause root production in the same zones. Mutilation, *e.g.*, separation of wood and bark followed by storage of wood and bark under humid conditions, results in production of shoots but not of roots from the wood. Extracts of bark contain growth-promoting and -inhibiting substances; extracts of wood induce leaf epinasty and rooting when applied to tomato plants. Exposure of cuttings to high [CO_2] or traces of ethylene favours the formation of adventitious buds. A. G. P.

Effects obtained with mixtures of root-inducing and other substances. A. E. Hitchcock and P. W. Zimmerman (Contr. Boyce Thompson Inst., 1940, **11**, 143—160).—Mixtures of root-inducing substances, in many but not in all cases, were more effective than the individual components. High additive effects were characterised by greater nos. of roots, higher % of rooted cuttings, and related phenomena associated with high concns. of growth-substances. Such effects were obtained with mixtures of growth-substances of different, rather than with those of similar, orders of activity. Particular mixtures did not exhibit similar relative efficiencies towards different species of cuttings. The activities of various mixtures of indolyl-acetic and -butyric, naphthyl- and phenyl-acetic acids, vitamin-B_1 and -B_6, and ethylene are compared. The vitamins function as activators of root formation but not as root-inducing substances. When applied to soil -B_1 had no beneficial influence on the rooting of numerous species whether these had been pretreated with growth-substances or not. A. G. P.

Enzymic liberation of auxin from plant tissues. F. Skoog and K. V. Thimann (Science, 1940, **92**, 64).—The removal of auxin from *Lemna minor* and other plant tissues is complete only after repeated extraction with ether over a period of several months. The slowness of the extraction is due to the gradual liberation of free auxin from some bound form. This liberation is mainly enzymic, and probably hydrolytic in nature. Addition of chymotrypsin, and to a smaller extent of cryst. trypsin, accelerates extraction. L. S. T.

Organic reserves in the roots of bindweed. C. G. Barr (J. Agric. Res., 1940, **60**, 391—413).—Cultivation, particularly at 14-day intervals, reduces carbohydrate reserves in bindweed; starch is most affected. $NaClO_3$ is less effective. In undisturbed roots starch increases to a max. in August, sol. carbohydrates to a max. in October. Colloidal N normally increases from May to October, but the rise is checked by cultivation. Other N fractions vary irregularly. R. L. E.

Formation of β-*o*-chlorophenyl-gentiobioside in gladiolus corms from adsorbed *o*-chloro-

phenol. L. P. Miller (Contr. Boyce Thompson Inst., 1940, **11**, 271—279; cf. A., 1940, II, 245; III, 776).—Gladiolus corms treated with air containing *o*-chlorophenol yield β-*o*-*chlorophenylgentiobioside*, isolated, after acetylation, as the *hepta-acetate*, m.p. 207·5—208·5° (corr.), $[\alpha]_D^{25}$ −49·4° in $CHCl_3$, which is hydrolysed by Ba methoxide to the glucoside (*hepta-propionate*, m.p. 178·5—179°, $[\alpha]_D^{26}$ −38·0° in $CHCl_3$). Emulsin hydrolyses both the glucoside and the acetate. The last is synthesised (identity confirmed by *X*-ray diffraction) from gentiobiose β-octa-acetate, *o*-chlorophenol, and *p*-toluenesulphonic acid, and is converted into the heptapropionate. The original corms may not contain much gentiobiose, which may be formed as a result of the treatment with *o*-chlorophenol. E. W. W.

Effect of direct and alternating currents on growth of oat seedlings. E. Burstein, L. M. Aliminosa, and L. Moriber (Trans. Electrochem. Soc., 1940, **77**, Preprint 24, 287—301).—Growth retardation of oat seedlings caused by passage of d.c. through the whole coleoptile was greater when the apex than when the base was made the anode. Passage of current through the apex only produced greater retardation than did passage through the base only. The effect of a current of 1 ma. through the whole coleoptile was entirely due to its action on the apical portion and probably restricted the supply of growth-promoting substance to the base. The effect of passage of a.c. was relatively smaller and was probably related to its influence on p_H, permeability, and charges on cell membranes. A. G. P.

(xxvii) PLANT CONSTITUENTS.

Quantitative analysis of plant tissues for lithium by the Ramage flame spectrographic method. N. L. Kent (J.S.C.I., 1940, **59**, 148—153).—An adaptation of the Ramage flame spectrographic method for determining Li in plant tissues is described; it has been applied to the determination of Li in various parts of healthy wheat and celery plants (normal and Li-treated) and in tomato crown galls and dead leaves. For each species there was a high correlation between the [Li] in the soil and that in the plant; the greatest accumulation of Li in wheat occurred in the oldest leaves, and in celery, in the margin of the largest leaves. The tolerance of the three species for Li was in the decreasing order: wheat, celery, tomato. The plants used appear to have little power of preventing the absorption of Li; accumulation of Li in the leaves may depend more on their growth rate than on transpiration.

Determination of zinc in plant materials using the dropping mercury electrode. J. F. Reed and R. W. Cummings (Ind. Eng. Chem. [Anal.], 1940, **12**, 489—492).—After removing most of the Al and Fe by adjustment of the reaction of the ash extract to p_H 4—5, the Zn is determined polarographically. Anions and cations generally found in plant ash do not interfere with the method even when present in concns. above normal. Cu and Co interfere if present in abnormally high concns. when the [Zn] is low. With a 1-g. sample of plant material, the limits of the method are 0·5—0·0005% of Zn. The accuracy depends mainly on the measurement of wave height; when this is not less than 20 mm., it is within ±5%. L. S. T.

Edible and poisonous beans of the Lima type (*Phaseolus lunatus*, L.). A. Viehoever (Thai Sci. Bull., 1940, **2**, 1—99).—The classification and botanical characteristics of the plants are described. Data are given for the amounts of various constituents in the plants and beans. Absence of oxalic acid and presence of linamarin, linamarase, and a bitter substance (0·1% in poisonous beans) serve as differentiating diagnostic tests. Dil. aq. NH_3 colours the hilum of all beans of the Lima type distinctly yellow. The glucoside is completely hydrolysed when the beans are macerated with water or very slightly acid solution. $NaHCO_3$ retards hydrolysis. No HCN is liberated from the glucoside by 5% HCl at 63° but complete hydrolysis occurs at 100° in approx. 9 hr. Methods for determining HCN in plant materials are discussed. Not more than 0·01% of HCN should be present in dry shelled edible beans. Methods for removal of HCN, none of which is satisfactory, are discussed. J. N. A.

Phenolic substances of white hellebore (*Veratrum grandiflorum*, Loes. fil.).—See A., 1940, II, 328.

Constituents of *Veronica* spp. II. F. Fuzikawa and K. Asami (J. Pharm. Soc. Japan, 1940, **60**, 80; cf. A., 1940, III, 548).—The following mannitol contents are recorded: *V. Anagallis*, L., 0·004 (0·2), *V. peregrina*, L., 1·13, *V. Nakaiana*, Ohwi, 0·1, *V. daisenensis*, Makino, 0·27, and *V. incana*, L., 3·72%. R. S. C.

Constitution of the tetrasaccharide fission product of starch by *Bacillus mesentericus vulgatus* amylase.—See A., 1940, II, 324.

Constituents of the cellulose-forming portions of young plants. II. T. Tadakoro and S. Kobayashi (J. Soc. Chem. Ind. Japan, 1939, **42**, 375B).—The contents of alcohol–benzene-sol. materials, and of ash, pentosan, and mannan of the young buds and terminal wood of four 4—7-year-old Japanese pines and cedars are given. W. A. R.

Hemicelluloses from oat hulls. II. P. W. Krznarich (Cereal Chem., 1940, **17**, 457—459; cf. A., 1935, 1485).—Repeated extraction of oat hulls and fractional pptn. with acid and EtOH showed the hemicelluloses to be composed of polyose and polyuronide material, the latter being the more sol. and the more readily extracted. T. M.

Hemicelluloses of wheat straw. H. D. Weihe and M. Phillips (J. Agric. Res., 1940, **60**, 781—786).—The isolation of the hemicelluloses is described; after fractionation they consist mainly of *B*-fraction together with small amounts of *A*- and *C*-fractions. Hydrolysis of the combined *A*- and *B*-fractions yields *d*-xylose, *l*-arabinose, and probably glucuronic acid or a methyl derivative. The ratio uronic acid : *l*-arabinose : *d*-xylose in this combined fraction is 1 : 0·9 : 23. J. N. A.

Origin and composition of hemicelluloses obtained from hardwoods.—See A., 1940, II, 324.

Hemicelluloses of lucerne hay. M. Phillips and B. L. Davis (J. Agric. Res., 1940, **60**, 775—780).—The isolation of the hemicelluloses, using an alcohol–benzene (1 : 2) extract of the hay, is described. After fractionation by the method of Norris *et al.* (A., 1937, III, 51) they consist almost entirely of the *B*-fraction. When hydrolysed with 2·5% H_2SO_4, *d*-xylose is obtained together with 0·8% of *l*-arabinose. The *B*-fraction also contains a uronic acid which is probably glucuronic acid or a methyl derivative. J. N. A.

Structure and composition of plant cell membranes. W. K. Farr (Nature, 1940, **146**, 153—155).—A review. L. S. T.

Carotenoids of Hungarian wheat flour. L. Zechmeister and L. Cholnoky (J. Biol. Chem., 1940, **135**, 31—36).—Unbleached Hungarian wheat flour contains not more than 0·01 mg. of carotene per kg. and no cryptoxanthine. 15 mg. of xanthophyll have been isolated from 60 kg. of flour. Other unidentified pigments with absorption max at 482, 452, and 477, 448 mμ. are present. P. G. M.

Xanthophyll from wheat germ. O. Gisvold (J. Amer. Pharm. Assoc., 1940, **29**, 312—313).—During attempts to isolate tocopherols from wheat-germ oil by extraction with org. solvent and pptn. as Pb or Ba salts, cryst. xanthophyll, m.p. 175°, absorption max. 475 and 450 mμ. in alcohol, was obtained. F. O. H.

Seeds of *Glottidium vesicarium* (Jacq.), Harper. P. A. Foote and L. G. Gramling (J. Amer. Pharm. Assoc., 1940, **29**, 311—312).—The seeds yield 3·39% of oil and appear to contain a saponin; no alkaloid or glucoside could be detected. F. O. H.

Constituents of tea. I. Arginine from giokuro. Y. Sakato (J. Agric. Chem. Soc. Japan, 1940, **16**, 739—740).—Aq. extraction of giokuro, one of the best Japanese green teas, yields arginine, 500 g. of the tea giving 0·84 g. of arginine picrolonate. J. N. A.

Essential oil of Formosan black tea. IV—VI. R. Yamamoto, K. Ito, and H. Tin (J. Agric. Chem. Soc. Japan, 1940, **16**, 781—802; cf. A., 1937, III, 503).—The neutral substances present in the distillate (b.p. 55—92°/4 mm.) consist of primary aromatic alcohols, chiefly benzyl and phenylethyl alcohol, together with phenylpropyl alcohol, linalool, and a secondary terpene alcohol. Geraniol is present in the distillate of b.p. 95—112°/4 mm. The oil also contains 2-acetylpyrrole, and small amounts of methylmercaptan and probably dimethyl sulphide. J. N. A.

Plant pigments in Galápagos islands. T. W. J. Taylor (Proc. Roy. Soc., 1940, **B**, **129**, 230—237).—No new anthocyanins are present in the characteristic and largely endemic plants of Indefatigable Island, but the proportion of nitrogenous anthocyanins is much higher than in European plants. J. N. A.

Argentine plants. II. Aspidospermine from *Vallesia glabra* and *V. dichotoma*. V. Deulofeu, J. De Langhe, R. Labriola, and (in part) V. Carcamo (J.C.S., 1940, 1051—1052).—Aspidospermine has been isolated from the leaves and branches of *V. glabra* and *V. dichotoma*. F. R. S.

***Erythrina* alkaloids.**—See A., 1940, II, 332.

(xxviii) APPARATUS AND ANALYTICAL METHODS.

Simplified planigraphy. D. Wheeler and E. W Spencer (Radiology, 1940, **34**, 499—502).—A modification of Twining's attachment for a Potter–Bucky table for the selection of a plane or stratum in the patient's body is described (cf. Brit. J. Radiol., 1937 **10**, 332). E. M. J.

New type of micro-respirometer. N. G. Heatley (J. Sci. Instr., 1940, **17**, 197—202).—An improved model of the author's micro-respirometer (cf. A., 1939, III, 295) incorporates up to 6 separate respiration chambers mounted on a revolving frame. C. R. H.

Apparatus for determining carbon dioxide exhaled by small animals for evaluation of the thyroid hormone. A. Ogata and T. Tanaka (J. Pharm. Soc. Japan, 1938, **58**, 38—40).—An absorption train is described for determining CO_2 exhaled by rats and mice. R. S. C.

Colorimetric determination of lactic acid.—See A., 1940, II, 319.

Determination of lactose in milk. N. K. Ghosh and B. K. D. Roy (Indian J. Med. Res., 1940, **27**, 953—962).—A rapid volumetric method using Soxhlet's modification of original Fehling's solution is described and the colorimetric and polarimetric methods are discussed. H. B. C.

Potentiometric titration of uric acid. E. Beccari (Boll. Soc. ital. Biol. sperim., 1940, **15**, 372—375).—Curves given by electrometric data for the oxidation at room temp. of uric acid by aq. $K_3Fe(CN)_6$ are discussed. F. O. H.

Determination of very small quantities of combined alkalis in biological material. J. H. Vogt (Skand. Arch. Physiol., 1937, **75**, 275—278; Chem. Zentr., 1937, i, 4833).—Approx. 0·02 c.c. of serum is ashed with conc. HNO_3 and $HClO_4$, and the residue evaporated with conc. H_2SO_4. The residual sulphates are dissolved in 2 c.c. of dil. HNO_3 and pptd. with 1% benzidine (in acetone). The washed ppt. is dissolved in 2 c.c. of 0·1N-HCl, and 10 c.c. of Yoshimatsu's reagent (described) are added; the solution is diluted to 100 c.c. and the determination effected in a step photometer (filter S47). An accuracy of ±5% is claimed. A. J. E. W.

Determination of non-hæmin iron. G. Brückmann and S. G. Zondek (J. Biol. Chem., 1940, **135**, 23—30).—1 g. of tissue pulp is ground with 5 c.c. of saturated aq. $Na_4P_2O_7$ and 10 c.c. of 10% trichloroacetic acid, heated at 100° for 7 min., and centrifuged, the residue being washed with a mixture of the reagents (1 : 1). The non-hæmin Fe is determined in an aliquot of the combined extracts by means of thioglycollic acid or *o*-phenanthroline. Vals. obtained check closely with indirect determinations, and are more reliable than those obtained by the HCl method. Hæmin is almost unattacked under the above conditions of heating. P. G. M.